HURRICANE KATRINA: ASSESSING THE PRESENT ENVIRONMENTAL STATUS

HEARING

BEFORE THE

SUBCOMMITTEE ON ENVIRONMENT AND HAZARDOUS MATERIALS

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

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CONTENTS

HURRICANE KATRINA: ASSESSING THE PRESENT ENVIRONMENTAL STATUS

THURSDAY, SEPTEMBER 29, 2005

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ENERGY AND COMMERCE,
SUBCOMMITTEE ON ENVIRONMENT
AND HAZARDOUS MATERIALS,
Washington, DC.

The subcommittee met, pursuant to notice, at 1:40 p.m., in room 2123 of the Rayburn House Office Building, Hon. Paul Gillmore (chairman) presiding.

Members present: Representatives Gillmor, Hall, Deal, Bass, Murphy, Barton (ex officio), Solis, Wynn, Capps, Allen, and Green.

Staff present: Mark Menezes, chief counsel for energy and environment; Tom Hassenboehler, majority counsel; Nandan Kenkeremath, majority counsel; Jerry Couri, policy coordinator; Peter Kielty, clerk; and Dick Frandsen, minority senior counsel.

Mr. GILLMOR. The committee will come to order, and I will recognize myself for the purpose of an opening statement.

One month ago, Mother Nature forcefully and violently visited the Gulf Coast of our country in the form of Hurricane Katrina. This storm caused widespread flooding and significant property and infrastructure damage in Louisiana, Mississippi, and Alabama. In the process, the storm caused public health and environmental problems for the residents that live and work in that region.

Katrina may well have been the largest single environmental disaster that our country has ever faced. We would like to learn the extent of the environmental damage, how long it will take to restore that environment, and even to what extent it is possible to do so. We are still close in time to the disaster, and at this stage, I do not expect that it will be possible to have complete answers to those questions.

And also, as I made it clear when I called this hearing, I did not want to pull anyone out of the field who is participating in the cleanup or actively involved in these efforts, but as people began to wade back into the Gulf Coast to recover from this catastrophe, several reports have variously characterized the state of the environment in the areas damaged by Hurricane Katrina, and hopefully, this hearing can help to distinguish between the rumors and the facts concerning the status and the safety of the water and soil along the Gulf Coast, and what is being done currently to address the situation by public and private sources.

In the past, our subcommittee has explored issues that have general importance to environmental protection. The matters that we

examine today, I think, are clearly the most significant and urgent since our committee, in the wake of September 11, helped establish Federal anti-terrorism provisions for drinking water utilities in Title IV of the Public Health, Security, and Bio-Terrorism Preparedness and Response Act. That work, which became law 3 years ago, was bipartisan, and I believe that should serve to instruct all of us that Hurricane Katrina, like the terrorists piloting those planes, did not sort out their victims by political party.

We are concerned about one thing, getting help to the people impacted by the storm, and this hearing isn't a forum for pointing fingers. I don't think it matters to the thousands of people who no longer call New Orleans or Bay St. Louis their home where blame lies. Now, I recognize a total understanding of what has happened in these communities, and all the needs to be met to remedy the environmental problems will take more time, and that is going to require significant future oversight.

I want to thank our witnesses, who have taken time to be with us today. Each of your expert testimony is valuable to us in understanding the situation as it is now, not as how it may have been portrayed. And I especially want to thank our witnesses from Louisiana and Mississippi, who have made themselves available, whether in person or via the teleconference arrangement we have, to give firsthand accounts, and put a face on the real problems of people that are facing in this area. You not only have our thanks, but also, our best wishes, as you return to your work in reconstructing a vital part of our Nation.

That concludes my opening statement, and I would like to yield 5 minutes to the gentlelady from California, Ms. Solis, for the purpose of an opening statement.

Ms. SOLIS. Thank you, and good afternoon. Thank you, Mr. Chairman, Chairman Gillmor, for holding this very important hearing today on the environmental impact of Hurricane Katrina. I also want to thank the panelists that are here, and all the witnesses that will be speaking. I know this is an item that all of us are deeply, deeply concerned about. We know that Hurricane Katrina was one of the largest natural disasters faced by our country.

The Department of Homeland Security Secretary Michael Chertoff recently commented: "We are going to have to clean probably the greatest environmental mess we have ever seen in this country." It left in its wake a range of serious environmental problems, including flooded and contaminated drinking water and multiple oil spills, leaking underground storage tanks, flooded sewage treatment plants, flooded buildings, debris and contaminated sediment, and other sludge.

Hurricane Katrina impacted, as we know, more than 1,000 drinking water systems, and 172 sewage treatment plants, and at least 2.4 million people were without access to safe drinking water. Initial testing by EPA found elevated levels of E. coli bacteria and lead levels that exceeded public health standards. Based on the biological and the chemical water testing data, EPA and CDC recommended that the public and emergency responders avoid contact with the floodwaters and the sediment deposited by the flood.

In all, though, Hurricane Katrina affected all populations, the hardest hit area was in low income and underrepresented communities. More than 100,000 in New Orleans, mostly poor blacks and Latino residents, were without cars and were stranded. Together with the elderly, disabled, and infirm, they were unable to evacuate themselves. They were the ones who lived in the greatest proximity to the major industrial facilities and toxic waste sites, who suffered most from the injustices of society's failure to consider the cumulative impacts of living and working conditions prior to Hurricane Katrina. These vulnerable communities are suffering tremendously in the wake of this natural disaster. Hurricane Katrina left hundreds of thousands of people without their livelihood and their homes, and in many cases, their dignity.

I am concerned about the rush to waive health provisions, safety, environmental, and social protections. This would undercut longstanding health and environmental standards in the name of hurricane recovery. The city's poor and other cities that were affected will pay the price if we weaken those cleanup rules. Cleanup and rebuilding efforts must ensure that the burden of exposure to toxic releases does not fall solely on minority and underrepresented communities.

All environmental justice and public health regulations should be met during testing, monitoring, cleanup, recovery, and reconstruction. Federal public health and environmental statutes provide many opportunities to address environmental risks and hazards in these communities. The crisis of this hurricane and other such disasters should not be used to weaken, waive, or roll back current Federal public health and environmental protections. Weakening, waiving, or rolling back Federal public health and environmental protections would further threaten the heavily damaged area of the Gulf Coast, negatively impacting the public health of those already affected communities.

The public has a right to know about the cleanup and the rebuilding effort and should be informed and involved in the decisions on cleanup, recovery, and building. Hurricane Katrina should be an opportunity for us here in the Congress to begin the process of writing the wrongs of environmental justice, not an opportunity to guarantee another generation that will live under these current circumstances.

Today, I hope we learn more about the ongoing cleanup, and the damage assessments, and about how long-term effects to protect the health of all our communities needs to be taken care of. We have an opportunity to rebuild these communities and the economy in the Gulf region, and as a model of the integrated, diverse, and sustainable society that all Americans deserve.

I look forward to hearing from our witnesses, and I personally want to just share briefly that in Los Angeles, we also had some victims come visit us that are staying there. We hope that they will get the attention that they need, and be able to come back to their particular neighborhoods, but many were concerned about cleanup, and what will happen to the waste, to their homes that were destroyed, and to their livelihoods.

So I hope that each of you, the panelists, will be able to help us to discern that information. Thank you very much, and I yield back.

Mr. GILLMOR. The gentleman from Texas.

Mr. HALL. Chairman Gillmor, thank you.

I want to come from two areas. First, personally, I want to thank each of you who are giving of your time here, not just the time you spend in this room with us, but the time you spent leading up to this, the time you spent preparing, the time you will spend returning to where you go, because we rely on you, folks like you, to give us testimony. You know more about it than we do, and from your information and your knowledge and your skill, we glean information with which we write the rules of the road up here, so you are very valuable to us, your time is valuable, and that is my opening statement.

Now, it is likely that the chairman of the Committee on Energy and Commerce, Chairman Joe Barton, may not make this. He several others going underway right now, and he was here until 12:45 last night on the Energy Bill. So if he comes, it will just be special, but he has asked me to go ahead and give you his statement.

So thank you, Chairman Gillmor, for holding this very important hearing to assess the present environmental damage and current situation in the Gulf South. Hurricane Katrina and Hurricane Rita have devastated the lives of residents in Louisiana, Mississippi, Texas, Alabama, and Florida, and destroyed parts of our environment on an unprecedented scale.

Our hearts go out to all the citizens of these areas whose lives have been forever changed by this horrific tragedy. We are here today to try and put politics aside, and get a real world glimpse at the current state of our environment in these devastated regions. While I realize many of the cleanup efforts are just beginning in New Orleans and in southwest Louisiana and Texas from Hurricane Rita, one thing should be clear. The health and safety of all the citizens of these areas who were displaced and devastated, should have the necessary assistance from the Federal Government to return to their normal lives.

As I have said before, I plan on using all the authority I have as chairman of the House Energy and Commerce Committee to help in any way I can. Having said that, our greatest assets are people. Immediately following Hurricane Katrina, EPA sent teams and equipment down to the area to assess the environmental impact of the storm. Important as their job was to investigate water and air contamination. Many of EPA's personnel and equipment were used to rescue the lives of hundreds of people from certain death. And I want to recognize their courage and self-sacrifice to go beyond their normal duties, to save our citizens in time of extreme danger. Our environment is important, but not as important as the lives of those that live within our environment.

I look forward to hearing testimony from all the witnesses today, including EPA, the Corps of Engineers, and the Agency for Toxic Substances and Disease Registry, and would like to especially recognize Mayor Rutledge from Pontotoc, Mississippi, and Karen Gautreaux, Deputy Secretary of the Louisiana Department of Environmental Quality, joining us by teleconference, who represent

areas of the country that have been completely devastated by these storms.

Once again, our hearts go out to you and to your citizens in this very difficult time. With that, I yield back on behalf of Chairman Barton, his time. Thank you, Mr. Chairman.

Mr. GILLMOR. Thank you, Mr. Hall, and let me also ask unanimous consent that all members' statements, after the conclusion of opening statements, be entered into the record.

Gentleman, the other gentleman from Texas. Were you next? The gentlelady from California, I apologize. Texans are always trying to be first.

Ms. CAPPS. Thank you, Mr. Chairman, and——

Mr. GREEN. We are also gentlemen, Mr. Chairman, so——

Ms. CAPPS. I should say, Mr. Green is an ultimate gentleman. Mr. Chairman, I thank you for holding this hearing, and I thank the panel of witnesses, both panels, actually.

It is essential that this committee devote whatever time is needed to review what has happened when Hurricane Katrina and Rita, hit the Gulf Coast. The timing of this hearing, however, is unfortunate; in fact, one could say alarming. It would have been appropriate to hold this hearing before yesterday's markup of new energy legislation in the Energy Subcommittee, which under the guise, I would say, of the need to streamline and weaken environmental, health, and safety regulations, to get energy production back online as quickly as possible—I say under the guise of, because it has never been demonstrated that these regulations have interfered with energy production and distribution—but that markup has already occurred with decisions made to relax standards, standards in an area that is clearly impacted by toxic waste spills, all kinds of hazardous materials, that are now strewn throughout the environment in the region that the hurricane impacted. And another committee has already produced legislation, the Resources Committee, that will be presented to the floor in the next several days, that does the same thing. So we see, once again, that the Federal Government's response to this whole situation has been inconsistent at best; nevertheless, here we are today, and this information that will be shared by our witnesses is critically important to all of us as we make decisions.

People's lives are at stake. In this process of responding to the hurricane, the Coast Guard did an admirable job. The response of FEMA was pathetic and has cost lives. We don't want to cost any more lives. The jury is still out on how we will assess EPA's overall response to this tragedy, and it is ongoing. As we look back at what has happened, we cannot take our eyes off the present and ongoing response. Specifically, we need to take a close look at the environmental health risks left behind, to ensure that more people are not harmed.

As a public health nurse, I believe that it is important to remember that environmental protection measures are an important component of basic public health and safety. From the date Katrina passed over the Gulf, report after report from residents and the media has described oil spills and fires, leaks from plants and storage tanks, the toxic water and chemicals, raw sewage and sludge are a major cause for concern. Yet we are only receiving vague and

piecemeal information about what threats to the public actually exist, what actions are being taken and should be taken to protect the public, and what measures people in the area should take to safeguard themselves.

EPA has acknowledged that there is great uncertainty over toxic hazards that remain in the flooded parts of New Orleans, yet people are reentering the area. Their initial testing found out elevated bacteria and lead levels, as well as some amounts of long-banned pesticides in the water. Yet EPA's "response to Katrina" webpage offers far too little information to ease any uncertainty citizens might have. For example, an EPA press release acknowledged the presence of fuel oils in soil deposits left behind from the floodwaters, but EPA has not released data, detailed data about which chemicals have been found in the soil. Many fuel oils and other petroleum byproducts are known carcinogens and can breach certain protective gear, yet to my knowledge, EPA has given no warning of potential cancer risks of exposure.

Over the next several months, EPA, the Coast Guard, CDC, and State and local officials will be working to clean up this mess. Throughout the process, we must guarantee that workers and evacuees have the right to know about what they are encountering, about the toxics found in the air and the soil and the water. We must ensure that all cleanups are completed to the highest possible health standard. How tragic it would be, after one disaster, to have an additional disaster to be uncovered years from now, as incidence of cancer and other horrible situations arise when preventable measures are a part of our knowledgebase. The public deserves the best that a government has as it relies on information in the first line of protection in such a crisis.

Thank you, and I yield back.

Mr. GILLMOR. The gentlelady yields back. The gentleman from New Hampshire.

Mr. BASS. Thank you, Mr. Chairman, and I thank you for scheduling this hearing, and we obviously all extend our sympathies to the victims of both Hurricane Katrina and Hurricane Rita, and I know that it is difficult right now for you guys to be here. You have got a lot to do, and we appreciate the fact that you have taken time to appear here today.

However, I do think it is essential for us, as soon as possible in this committee, to assess the possible public health and long-term environmental threats to the Gulf Region. As you all know, the hurricane, both of them, stretched over 90,000 square miles. A lot of infrastructure has been destroyed, drinking water and waste treatment facilities are in peril, and there is evidence of, obviously, release of chemicals, oil spills, hazardous materials, and to the air and soil in the area.

I am hopeful, and in fact, I believe it is imperative, that we have a coordinated plan of recovery to deal with, I guess there are over 575 Katrina-related spills of petroleum and hazardous chemicals. There are 24 Superfund sites within the affected areas, and of course, there are hundreds of thousands of wells and water systems and waste treatment plants and so forth that have been compromised. And I hope there is a plan in place to properly remove and treat these areas, given the fact that we have citizens moving

back into these areas, and we really may not be 100-percent sure how safe it is for them to be there.

So it is a very timely hearing. I thank you all for being here today. I know it is a sacrifice to do so, but we need to know this information. I yield back.

Mr. GILLMOR. The gentleman yields back. The gentleman from Texas.

Mr. GREEN. Thank you, Mr. Chairman. I would like to have my full statement placed into the record, and just say——

Mr. GILLMOR. Without objection.

Mr. GREEN. Having a district in east Harris County in the city of Houston, and seeing what damage we had just from Hurricane Rita, our hearts go out again to the folks in Mississippi and Louisiana, and also southeast Texas or southwest Louisiana.

The environmental concern we have for the New Orleans area, and I know that is the focus of our hearing, but I will just give an example in our own community. Baytown, Texas, in the east part of Harris County, is part of our district, lost their power supply for their water system, and so, we were concerned that they would not have enough water for not only the residences, but all the industry that is also in and served by the Baytown community. On very short notice, things were done, and they were able to restore the power, actually having a different electricity provider serve across the boundary lines, as we do in Texas, because we have our different providers, to make sure, so not only do we have water for our residences, but we had water for our industry, who are trying to get the refineries back up, Exxon Mobil has a huge, the largest refinery in the country in our district, and they needed water to produce that gas, that we know we need it for our cars and also aviation fuel.

But again, I am glad you are holding this hearing, so hopefully, we can learn what we didn't do, and there but for the grace of God, we won't have that problem in east Harris County, where we also have some of the same industries that are along the Mississippi River, but also in Southwest Louisiana. Thank you, Mr. Chairman.

Mr. GILLMOR. Thank you. We will now go to the gentleman from Georgia, to whom I apologize for having skipped over earlier.

Mr. DEAL. That is all right, Mr. Chairman. Thank you for recognizing me.

I just simply wanted to say thank you to the witnesses, who have taken time to be here. I think all of us recognize that no community is going to be environmentally perfect at any point in time. I am sure the area we are talking about here was not environmentally perfect before this disaster, and certainly is not now, and all of us want to simply know what is the best we can do to correct the situation as soon as possible, and how can we best put our resources to work?

I would be remiss if I did not express appreciation to all of you, and to those who work with you, for the efforts you have made in these very serious and drastic times that have just preceded this hearing. Thank you for being here today.

Thank you, Mr. Chairman. I yield back.

Mr. GILLMOR. Thank you. I want to once again welcome our witnesses, and tell you how much, we very much appreciate you being here, and giving us your knowledge and expertise.

We will go first to Marcus Peacock, who is the Deputy Administrator of EPA.

STATEMENTS OF HON. MARCUS C. PEACOCK, DEPUTY ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY; HENRY FALK, DIRECTOR, NATIONAL CENTER FOR ENVIRONMENTAL HEALTH AND AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, CENTERS FOR DISEASE CONTROL AND PREVENTION; AND JOHN PAUL WOODLEY, JR., ASSISTANT SECRETARY OF THE ARMY CIVIL WORKS, DEPARTMENT OF THE ARMY

Mr. PEACOCK. Thank you very much, Mr. Chairman. There we are. And good afternoon to you, and to members of the subcommittee.

On September 6, 2005, I was appointed as the lead coordinator at EPA for response activities related to Hurricane Katrina, and I appreciate the opportunity to provide for today with an update of EPA's response. Mr. Chairman, I request, if it is all right, that my full statement be included in the record.

Our hearts go out to the people of the Gulf region, and we share with you a sense of duty and obligation to restore the communities affected by Hurricane Katrina, and most recently, Hurricane Rita. The response will require sustained long-term coordination across all Federal agencies with the affected State governments. My testimony today will provide you with a brief description of EPA's immediate response to Katrina, and I will then tick off our primary environmental concerns at this point in time, including such issues as debris management, the status of drinking water facilities, wastewater facilities, and the like.

Just let me, first of all, talk about EPA's early response to Hurricane Katrina. We pre-deployed personnel to the National Response Coordination Center, and sent on-scene coordinators to Florida, Louisiana, Alabama, and Mississippi before Hurricane Katrina made landfall. After the hurricane hit, EPA joined other organizations in urgent rescue needs, putting over 60 watercraft—these were EPA watercraft that are otherwise used for environmental monitoring to work as search-and-rescue vessels. But as soon as possible after that, EPA turned its attention to its primary responsibilities under the National Response Plan. These include providing guidance for debris issues, assisting with the restoration of drinking water and wastewater infrastructure, addressing hazardous releases and oil spills, and providing environmental monitoring and assessment support.

Just let me tick off the particular environmental concerns we are dealing with today, and the first is debris. We are working very closely with the Corps of Engineers to provide guidance on disposing of debris that may contain, for instance, PCBs or asbestos, and we will continue to provide site-specific technical assistance in the disposal of hazardous and non-hazardous wastes.

Let us next talk about drinking water. Many drinking water systems were affected in the three States. The map showing the sys-

tems is up there. All those dots are drinking water systems that were in the swath of Hurricane Katrina. As of yesterday, the states were reporting that approximately 80 percent of the drinking water systems in the region are operational. Those are all mostly the green dots. I know that may sound pretty good, but we believe that an estimated 2.3 million people served by facilities before the hurricane are not currently being served by operational drinking water facilities.

Let us talk about wastewater. We have here similar map on wastewater—these are wastewater facilities in the declared disaster area. Based on what we know, as of yesterday, approximately 90 percent of wastewater facilities in the affected area are operational. Once again, while that sounds good, we think there is an estimated population of 1.8 million people that were being served by these facilities before the hurricane that currently are not being served by operating wastewater facilities. They are red dots on the map, which includes, for instance, New Orleans. And getting 100 percent of these dots, if you will, green, is a very high priority.

Let me talk about oil and chemical spills. EPA and the United States Coast Guard are working together to address what, so far, are about 400 oil and hazardous waste material releases that have been reported to the National Response Center or otherwise observed by emergency responders. Now, I know this subcommittee in particular is interested in Superfund sites, so let me address those. There are 24 Superfund sites, as shown on the chart here, or NPL sites, located in the region affected by the hurricane. We are working together with State health and environmental agencies, and I just want to say here, the relationship between EPA and the State agencies, including LDEQ, has just been spectacular. We are really working side by side, literally side by side. And both EPA and the states have conducted rudimentary inspections—well, we conducted rudimentary inspections of all these sites as soon as they were accessible. Now, we recognize this was only a first look at the sites, and we are in the process of assessing each one of these in greater detail. Initial visual inspections and the additional inspections we have been able to do to date indicate a number of downed fences and some damage to groundwater treatment piping. Thus far, no sites have been identified as suffering significant damage, however, monitoring and assessment are not over by any means.

Let us talk about floodwaters. In the aftermath of Katrina, contamination of floodwaters was one of our leading concerns, and of particular concern to rescue workers and residents who might have still been in the area. The results to date, as indicated before, show that floodwater has high levels of E. coli and other bacteria. These are markers that you might find in raw sewage. W ealso have found some contaminants which exceeded drinking water assessment standards. Fortunately, other than the bacterial elements we found, the contaminants detected thus far have not been at levels that would pose an immediate risk to human health. They could pose a long-term risk, but the main issue here is, of course, the bacterial contaminants, which could cause an infection.

Let me talk about sediments. As the floodwaters of New Orleans have begun to recede, we are analyzing the sediment. This map

shows all the sediment sites we have sampled thus far. Preliminary results from sediment sampling collected by both EPA and once again, Louisiana, indicate that some sediments are heavily contaminated with fuel oil, and once again, with bacteria, which is not a surprise, since we found it in the floodwaters. Human health risks may therefore exist from contact with sediment deposited from receding floodwaters.

Let me just touch briefly on air monitoring. We have been doing air monitoring. It will be of increasing importance to continue to do that. This slide shows a number of the tools we are using, including aircraft, as well as mobile monitors on the ground and stationary monitors. As people start coming back into the area, particularly rescue workers, we will continue to monitor for contaminants, as well as possible dangers from particulates.

Looking ahead, much remains to be done to help address the public and health impacts of Hurricane Katrina, and some of you may know I am fairly new to EPA, although on some days, it doesn't feel that way to me. But the dedication with which EPA employees have responded to this crisis makes me very proud to be counted among them. As Senator Jeffords recently noted after hearing what EPA personnel had done in response to Katrina, he said: "We have heard so much about what went wrong in Katrina's aftermath. This is one example of what went right. These EPA employees have my utmost respect and gratitude."

Thank you very much for letting me appear today.

[The prepared statement of Marcus C. Peacock follows:]

PREPARED STATEMENT OF MARCUS C. PEACOCK, DEPUTY ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

INTRODUCTION

Good afternoon, Mr. Chairman and members of the Sub-Committee. My name is Marcus Peacock and I serve as the Deputy Administrator at the U.S. Environmental Protection Agency (EPA). On September 6th, the Administrator formally appointed me to lead the coordination of the Agency's response activities for Hurricane Katrina and I appreciate the opportunity to provide you today with an update on EPA's response.

Our hearts go out to the people of the Gulf region, and we share with you an urgent sense of duty to help restore the communities affected by Hurricane Katrina—and most recently by Hurricane Rita. Over the past few weeks, natural disasters have left their mark on the Gulf region; the loss of life and destruction is staggering. The magnitude of Hurricane Katrina will require sustained, long-term coordination across all federal agencies and with the affected state and local governments. My testimony today will provide you with an overview of EPA's role and activities in the affected Gulf region, our impressive coordination with federal, state and local partners and a snapshot of our primary environmental concerns. Early Response for Hurricane Katrina

First, I want to briefly touch on EPA's early response to Hurricane Katrina. Beginning on August 25th, EPA pre-deployed personnel to the FEMA National Response Coordination Center and sent On-Scene Coordinators to the Florida, Louisiana, Alabama and Mississippi Emergency Operations Centers before Hurricane Katrina made landfall. The On-Scene Coordinator (OSC) is the federal official responsible for monitoring or directing responses to all oil spills and hazardous substance releases reported to the federal government. We sent additional personnel to the affected areas as soon as travel into the region was possible. In anticipation of Hurricane Rita, EPA also dSeptember 20th. he number of EPA staff and contractors assisting with recovery efforts is more than 500 in the affected Gulf region, as indicated on the deployment map.

When EPA personnel arrived in New Orleans, it was clear that saving lives was the first priority, and EPA joined other federal, state, and local responders in urgent rescue needs, putting over sixty EPA watercraft otherwise used for environmental

monitoring to work as search and rescue vessels. Our field staff and contractors—mostly environmental experts equipped to address oil and hazardous substances releases—joined the fire fighters, police, and other first responders and rescued nearly 800 people in Louisiana.

EPA ROLE IN FEDERAL RESPONSE

After helping with urgent rescue needs, EPA turned its attention to its primary responsibilities under FEMA's National Response Plan. EPA is the lead federal agency for Emergency Support Function (ESF) #10, which addresses oil and hazardous materials, and works with other agencies to provide support for a number of other Emergency Support Functions, including ESF #3, which addresses Public Works and Engineering. Specifically, our responsibilities include preventing, minimizing, or mitigating threats to public health, welfare, or the environment caused by the actual or potential releases of hazardous materials; testing the quality of flood waters, sediments, and air; and assisting with the restoration of the drinking and waste water infrastructure. Also under ESF #3, the Agency anticipates a growing role working with the U.S. Army Corps of Engineers (USACE) to address final disposition of the large volumes of debris from homes, buildings and other structures damaged by Hurricane Katrina. EPA, in coordination with the States, is providing information to both workers and the public about test results, as well as assisting communities with debris disposal and hazardous waste issues.

DEBRIS MANAGEMENT AND DISPOSAL

The volume of debris left behind by Hurricane Katrina is huge. EPA is working closely with other federal agencies (particularly the US Army Corps of Engineers), state agencies, and local governments to facilitate the collection, segregation, and management of household hazardous waste, containers, and the larger debris.

To date, we have provided guidance on: identifying electrical equipment that may contain PCBs; marking and storage of electrical equipment that may contain PCBs; disposal of electrical equipment that may contain PCBs; and handling and disposal of debris containing asbestos. EPA has also provided the affected states with guidance on burning debris. EPA personnel continue to provide site-specific technical assistance in the disposal of hazardous waste and a wide array of waste management debris left behind by the storm.

DRINKING WATER AND WASTE WATER INFRASTRUCTURE

EPA is working closely with state and local officials and private experts to assess damage and provide technical assistance to water infrastructure systems in the FEMA designated areas. Two maps are included which indicate the current status of these facilities. EPA's mobile laboratories and regional labs in Mississippi and Louisiana are also available to provide on-going water testing capabilities.

Many drinking water systems were affected in the three states. According to local officials, many were disabled or impaired by the loss of electrical power but the majority of systems are now operating, some with "boil water" notices. Nonetheless, there are still some systems that remain inoperable or in unknown condition. As of September 27th, the states reported that approximately 80% of the drinking water systems in the region were operational. Prior to the hurricane, we believe that an estimated population of 2.3 million people were served by facilities that are not currently operational. Additionally, because there are many private well owners in the affected region, EPA has begun to distribute water testing kits in affected parishes in Louisiana. EPA has issued a local advisory to let home owners know that these kits are available.

Many wastewater facilities were affected, mostly in Louisiana and Mississippi. Based on what we know as of September 27th, approximately 90% of these facilities in the affected area are operational. While the information on wastewater treatment plants is not as readily available as for drinking water facilities, we believe that an estimated population of 1.8 million people were served by facilities that are not currently operational.

Getting 100% of these facilities operational is a high priority. EPA plans to maintain a strong partnership with health and environmental agencies in Louisiana, Mississippi and Alabama as we move forward.

OIL SPILLS AND HAZARDOUS RELEASES

There are hundreds of chemical and petrochemical facilities as well as other sites of potential concern which are being inventoried and assessed. EPA and the United States Coast Guard (USCG) are working together to address oil and hazardous ma-

terial releases reported to the National Response Center or otherwise observed by our emergency responders. As of September 21st, EPA and the USCG have responded to over 400 reported incidents. Of these, there were five major oil spills in the New Orleans area resulting in releases of over 8 million gallons. These spills are also being addressed by EPA and the USCG.

SUPERFUND SITES

There are twenty-four Superfund sites located in the region affected by Hurricane Katrina. As indicated on the map of the Federally declared disaster areas as of September 26th, there are fifteen National Priority List (NPL) sites in Louisiana, three in Mississippi, and six in Alabama. Working together with state health and environmental agencies, EPA conducted initial visual inspections of each NPL site as soon as they were accessible. Recognizing this was only a "first look" at these sites, we are assessing the condition of all of the affected NPL sites in greater depth as recovery continues. The initial visual inspections indicated a number of downed fences and damage to some groundwater treatment piping, however, to date, no sites have been identified as having suffered significant damage.

SEDIMENT IN NEW ORLEANS

As flood waters in New Orleans again recede, we are analyzing the sediment left behind. We are conducting biological and chemical testing, specifically for volatile organic compounds, semi-volatile organic compounds, total metals, pesticides, and total petroleum hydrocarbons. Preliminary results from sediment sampling collected by EPA and the Louisiana Department of Environmental Quality (LDEQ) indicate that some sediments are contaminated with bacteria and fuel oils. Human health risks may therefore exist from unprotected contact with sediment deposited from receding flood waters and exposure to sediment should therefore be avoided if possible. E. coli was detected in sediment samples, which implies the presence of fecal contamination. Some of the semi-volatile organic compounds, common to diesel and fuel oils, were also detected at very elevated levels. The levels of metals detected thus far have been below levels that would be expected to produce immediate adverse health effects. Extensive sediment sampling continues in the flooded areas of New Orleans.

FLOOD WATER

In the immediate aftermath of Katrina, the potential contamination of flood waters was among our leading concerns. EPA's initial plans to collect water samples in the New Orleans flood zone were set aside to assist in rescue operations, and were further delayed by limited access due to security concerns. Nonetheless, EPA, in close coordination with the Louisiana Department of Environmental Quality, began water sampling on September 3rd, and we continue to conduct biological and chemical testing of the flood waters. Planned and actual sampling sites to date are reflected on the map which shows the extent of the flood waters in New Orleans as of August 30th.

The flood waters continue to be analyzed for over 100 chemical priority pollutants as well as for bacteria. Results to date indicate that the flood water has high levels of E. coli, and that some locations tested had lead and arsenic levels which exceeded drinking water assessment levels. Although other contaminants were detected, none have been at levels that would pose an immediate risk to human health. Throughout this process, EPA has taken great steps to ensure scientific accuracy. EPA solicited the assistance the Science Advisory Board to review the flood water sampling plan, and EPA and CDC have routinely conducted a thorough data review, and interpreted the data for potential human health affects.

WATER QUALITY

EPA is working closely with its federal and state partners to mitigate environmental impacts to Lake Pontchartrain caused by the flood waters. As the Corps continues un-watering operations, skimming booms are deployed to remove oil and debris from water prior to pumping. After pumping, additional booms are being deployed in the canals leading to the Lake to further reduce oil, debris, and solids. Aerators are also being used in the canals to raise dissolved oxygen levels in the water, prior to outfall to the Mississippi River.

Contaminated flood waters and sediment may adversely impact coastal aquatic resources. As such, EPA and USACE are actively evaluating options for directing the floodwaters. In addition, EPA is coordinating water quality monitoring efforts with USGS, NOAA and our state partners in the Mississippi Sound and the Gulf of Mex-

ico. The poster behind me reflects the coordinated post-Hurricane plans to monitor water quality in the Gulf of Mexico.

AIR MONITORING

Air monitoring networks normally in place for monitoring particulate matter, ozone, sulfur dioxide, oxides of nitrogen, and carbon monoxide under the Clean Air Act were mostly destroyed in New Orleans and damaged and disrupted in coastal Mississippi. EPA is working to restore monitoring systems in those regions, as well as to deploy new monitors designed specifically to address potential air quality impacts during the recovery from Hurricane Katrina. For instance, as sediments from the floodwaters dry, EPA has conducted air screening sampling with special monitors to assess potential inhalation risks from particulates.

Specific to New Orleans, EPA, in coordination with our government partners in Louisiana, makes daily tactical decisions regarding air monitoring needs and works with an agency-wide team of air monitoring professionals to address both emerging and source or location specific issues as well as longer term regional air quality issues.

EPA has a number of tools to measure air quality. These include DataRam 400, personal air monitoring devices, as well as use of a remote sensing aircraft known as ASPECT to locate chemical spills that needed emergency response to protect both water and air quality. EPA's environmental surveillance aircraft were in operation since the early days of the emergency, and the effort has now transitioned into deployment of specific ground based preliminary screening over the larger New Orleans area. We anticipate that ASPECT may also be used in the areas affected by Hurricane Rita.

EPA's real-time mobile laboratory—the Trace Atmospheric Gas Analyzer (TAGA)—is sampling air quality in the New Orleans area. Initial screening results from the TAGA represent the beginning of extensive sampling efforts. As this is a dynamic situation, general conclusions should not be made regarding air safety based on results from snapshots of data.

EPA and the affected states will continue to monitor for potential inhalation risks and have plans to enhance their temporary monitoring networks in the coming weeks to monitor and evaluate the air impacts of recovery activities including the burning of debris.

REOCCUPATION OF NEW ORLEANS

EPA and CDC formed a joint task force to advise local and state officials of the potential health and environmental risks associated with returning to the City of New Orleans. Their report, titled *Environmental Health Needs and Habitability Assessment,* was issued on September 17th and identifies a number of challenges and critical issues for consideration prior to the reoccupation of New Orleans. The task force is now incorporated into the Federal New Orleans Reoccupation Zip Code Assessment Group (Zip Code Assessment Group), which will provide information on a broad range of issues, ranging from infrastructure to health issues. Their recommendations will assist State and Local officials in their decisions regarding when to allow residents to reoccupy the city. As part of this larger group, EPA will continue to work to identify potential health and environmental risks associated with returning to the city based on the Agency's ongoing efforts to assess the quality of the air, water and sediment.

FUEL WAIVERS

EPA, in conjunction with the Department of Energy, responded quickly to address disruptions to the fuel supply that have occurred due to the damage to refinery and pipeline infrastructure in the Gulf Region. To increase the supply of fuel and minimize potential supply disruptions, the Agency has issued emergency waivers of certain federal and state fuel standards. On August 30th, EPA granted waivers applying to low sulfur diesel fuel requirements, Reid Vapor Pressure (RVP) standards that control the volatility of gasoline during the summer months, state gasoline sulfur limits, or reformulated gas (RFG) requirements. On September 21st, EPA expanded this effort in order to minimize potential fuel supply disruptions caused by Hurricane Rita. To address each fuel supply situation, waivers have been granted for various periods of time and have been applicable at the national, state or local level, to the extent necessary to alleviate the fuel supply disruption.

In taking these actions, EPA used a Clean Air Act waiver provision recently signed into law as part of the Energy Policy Act of 2005 signed into law this year. This provision authorizes the Administrator of EPA to temporarily waive fuel standards due to "extreme and unusual" circumstances "that are the result of a natural

disaster, an Act of God, pipeline or refinery equipment failure, or another event that could not reasonably have been foreseen or prevented and not the lack of prudent planning" on the part of fuel suppliers.

INFORMING THE PUBLIC

We view communication to the public, workers, and other agencies to be a critical component of our response effort. The Occupational Health and Safety Administration (OSHA) was on-scene early in the response effort, distributing over 3,500 fact sheets by hand in the first two weeks and conducting interventions that removed more than 850 workers from serious or life threatening hazards. OSHA continues these activities and on a daily basis, EPA response personnel and contractors receive health and safety instructions regarding field conditions and safe work practices. EPA's preliminary sampling results are also provided to On-Scene Coordinators to facilitate field decisions and ensure health and safety of workers.

EPA posts advisories on our website and also distributes them through the Incident Command Post in Baton Rouge. We also have been alerting communities through AM and FM radio broadcasts, particularly on aerial mosquito spraying and how to avoid vector borne illnesses such as the West Nile Virus.

FUTURE CHALLENGES

Looking ahead, much remains to be done to help address the public health and environmental impacts of Hurricane Katrina. The safe management of debris remains a high immediate priority, and the Agency will assist our federal, state and local partners as they move forward on debris removal. For its part, the Agency will strive to provide sound and practical advice, participate in hazardous waste removal where appropriate, and monitor air quality where open burning is occurring. EPA will also continue to work with the USACE and others to support the States and local governments in their efforts to repair and restore public facilities including drinking water, waste water, and waste treatment facilities. We will also continue to monitor air, water, and sediment quality in the region and make sure that this information is readily available to federal, state and local officials, other responders, and the public.

CONCLUSION

The nation faces an enormous task in restoring and rebuilding the affected areas. Simply meeting many basic needs of people in the region—including shelter, safe drinking water, sanitation, and protection from disease and hazards—will require a broad partnership across government agencies, the private sector and nongovernmental organizations (NGOs). We expect that citizens and government agencies will look to EPA and our Federal partners for technical expertise, scientifically sound data, and practical advice on environmental and public health conditions in the region for some time to come. We are focused on meeting that challenge.

Finally, as local communities undertake the task of reviving their economies and helping businesses restart their operations, EPA, in partnership with other federal, state, and local agencies, will provide technical expertise and guidance to assist in the recovery. Some of you may know that I'm quite new to the EPA, but what I've seen in the past few weeks makes me proud to be counted among them. I'd like to end by reiterating a statement made by Senator Jim Jeffords after our briefing of the Senate Environment and Public Works Committee: "We've heard so much about what went wrong in Katrina's aftermath, and this is one example of what went right. These EPA employees have my utmost respect and gratitude."

At this time I welcome any questions you may have.

Mr. GILLMOR. Thank you very much. We will go to Dr. Henry Falk, who is the Director of the National Center for Environmental Health and Agency for Toxic Substances and Disease Registry. Dr. Falk.

STATEMENT OF HENRY FALK

Mr. FALK. Thank you very much. Good afternoon, Mr. Chairman, and Congresswoman Solis, and members of the subcommittee. My name is Dr. Henry Falk, and I am the Director of the Coordinating Center for Environmental Health and Injury Prevention at the Centers for Disease Control and Prevention, Agency for Toxic Sub-

stances and Disease Registry, ATSDR. ATSDR is a sister agency to the CDC, and is part of the Department of Health and Human Services. Because of our responsibilities under the Superfund program, we work very closely with EPA, as well as State and local governments, and with communities across the country.

Hurricane Katrina is a huge public health emergency. It is an unparalleled challenge to the public health community and particularly to those of us in environmental health as we grapple with so many complex and interwoven environmental health issues. In New Orleans, the environmental health system needed to support a major metropolitan area was severely disrupted. This has also been true for many other cities and communities in the storm's path. In addition, a substantial proportion of residential structures, the homes for so many people in New Orleans and elsewhere, have sustained severe structural damage from flooding. On a personal level, we all keep in mind the heart-wrenching nature of this tragedy and its broad impact.

Shortly after Hurricane Katrina hit, Health and Human Services Secretary Michael Leavitt and EPA Administrator Steve Johnson asked me to go to New Orleans, Louisiana, to lead a CDC/ATSDR and EPA taskforce to identify the overarching environmental health and infrastructure issues facing New Orleans. My first actual view of New Orleans was in a flyover by helicopter. It was essentially an empty city still very much underwater, and with great evidence of storm damage. For many of us at ATSDR, CDC, HHS, and elsewhere, these scenes have served as an overwhelming stimulus to respond to the best of our abilities.

The 13 environmental health issues we initially identified include drinking water, wastewater, solid waste and debris, sediments, soil contamination, toxic chemicals, power and natural gas, housing, the unwatering and flood waters, occupational safety and health, vector rodent animal control, road conditions, underground storage tanks such as gasoline, and food safety.

The most striking feature of this disaster is the vast array of key environmental needs and infrastructure services that have been affected. These are complex and interrelated, and they will need to be assessed by local elected officials when making decisions about re-inhabiting New Orleans.

ATSDR staff have been valiant and dedicated in their efforts, and worked tirelessly to assist the people affected by Hurricane Katrina. At least 15 percent of our staff have been deployed directly to Hurricane Katrina activities through the CDC Emergency Operations Center or through HHS and the U.S. Public Health Service auspices. Probably an equivalent number have been backing them up at headquarters in Atlanta, and those numbers continue to grow.

ATSDR staff works closely with EPA. We have staff stationed in EPA regional offices, and we are assisting EPA in the field and around the clock to mitigate environmental health issues, including possible chemical exposures. CDC/ATSDR staff in the field and at HHS and CDC headquarters are collaborating with Federal, state, and local health officials to evaluate and analyze the environmental data.

ATSDR is also actively participating on the Environmental Impacts and Clean-Up Working Group, as part of a White House taskforce on Hurricane Katrina. That working group is co-chaired by the Deputy Secretary of Health and Human Services, and by my colleague to the right, Marcus Peacock, Deputy Administrator of the EPA. The working group is particularly focused on policy, has served as an important locus for interagency discussions. ATSDR is particularly engaged with the group, providing technical input by neighborhood and zip code, on environmental issues related to the return of residents to New Orleans.

In the future, ATSDR will continue to provide technical assistance on issues related to potential exposure of the public and of response workers to hazardous substances. We will continue to provide toxicological expertise, and make recommendations about ways to eliminate or control exposures to hazardous substances in the environment. We will continue to work closely with Federal, state, and local partners in working through these difficult issues, and as the recovery progresses, we hope to effectively serve the needs of the many people and communities affected by the hurricanes.

Thank you for this opportunity to speak with you, and I look forward to your questions.

[The prepared statement of Henry Falk follows:]

PREPARED STATEMENT OF HENRY FALK, DIRECTOR, COORDINATING CENTER FOR ENVIRONMENTAL HEALTH AND INJURY PREVENTION, CENTERS FOR DISEASE CONTROL AND PREVENTION/AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

INTRODUCTION

Good afternoon Mr. Chairman and members of the Subcommittee. My name is Dr. Henry Falk and I am the Director of the Coordinating Center for Environmental Health and Injury Prevention at the Centers for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is an independent agency within the Department of Health and Human Services (HHS), and a sister agency to the CDC. Its relationship with the CDC's National Center for Environmental Health (NCEH) is especially strong, because the Director of ATSDR, Dr. Howard Frumkin, also directs NCEH. ATSDR also partners extensively with the United States Environmental Protection Agency (EPA).

This afternoon I will describe ATSDR's ongoing contribution to the Hurricane Katrina response, based on its unique expertise and experience in responding to emergency releases of hazardous substances under Superfund.

ATSDR was established under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), to assess and prevent or limit potential exposures to hazardous substances and associated adverse health effects. Each year ATSDR conducts assessments of potential exposures to hazardous substances, and potential associated health impacts, at hundreds of sites around the Country.

Frequently these assessments are conducted in connection with an emergency response, where ATSDR is called on to support response work in communities impacted by acute releases of toxic chemicals. Through 25 years of experience in emergency response under Superfund the Agency has developed a workforce with experience and expertise that is directly applicable to assessing potential exposures and human health threats from exposure to contaminated floodwater, soil and sediment in the wake of a natural disaster.

The wealth of skills in our multidisciplinary workforce—from physicians to toxicologists to epidemiologists to environmental engineers to health education specialists and risk communicators—coupled with the location of ATSDR field staff in EPA regional offices around the country, allow ATSDR to mobilize quickly and coordinate effectively with HHS and CDC and other agencies within the Department, and with EPA and other government agencies, in a strategic response to emergency situations. ATSDR staff in the EPA regional offices work collaboratively with EPA and

state partners to prepare for and respond to chemical and other public health emergencies.

ATSDR performs emergency response activities under the National Response Plan. ATSDR collaborates extensively with other federal partners as part of the Emergency Support Functions (ESF) dedicated to public health and medical services as well as oil and hazardous materials responses. These correspond to ESF 8 and 10, respectively.

ATSDR RESPONSE TO HURRICANE KATRINA

Working in close coordination with HHS and CDC, as well as with EPA, ATSDR is providing critical expertise, resources and assistance to the multi-level public health response to Hurricane Katrina. The discussion below describes three primary components of ATSDR's ongoing contribution to the response: (1) Participation in task forces and work groups established by the Administration to assess environmental health needs and related policy issues; (2) Playing an integral role in the CDC Emergency Operations Center, and deploying staff to emergency operations centers in HHS, FEMA and EPA; and (3) Working in the field to assess the potential for exposure to hazardous substances that may adversely impact human health.

(1) Environmental Health Needs & Habitability Assessment Joint Task Force of CDC/ATSDR and EPA, and the Environmental Impacts and Cleanups Working Group of the White House Hurricane Katrina Task Force

One unique contribution by CDC/ATSDR to the Hurricane Katrina response was leading a joint CDC/ATSDR and EPA task force that developed an initial assessment report identifying the overarching environmental health and infrastructure issues related to reinhabiting New Orleans.

At the request of Secretary Michael Leavitt of HHS and Administrator Steve Johnson of EPA, CDC/ATSDR and EPA established the joint taskforce to conduct the assessment. I had the privilege of serving as Chair of that joint taskforce, which was made of a multidisciplinary and multiagency team with expertise in environmental health science, environmental engineering, medicine, health and risk communication, and administration/logistics. The initial eight-member team consisted of personnel from CDC/ATSDR and EPA.

The team began its work on September 6, 2005, and completed it on September 12, 2005. Our work was guided by six key questions:

1. What are the core environmental health issues to be addressed?
2. Which agencies and organizations at the federal, state, or local level are responsible for, or involved in, the various environmental health issues?
3. What progress has been made and what challenges exist?
4. What is the timetable to address these environmental health issues?
5. What resources exist or need to be brought to bear to address these environmental health issues?
6. What are the key milestones and endpoints that define success?

Initially we made contacts with CDC leadership on the ground in New Orleans, and with other key federal, state and local public health and environment leadership. In addition, we completed air and surface level tours of New Orleans to see firsthand the impact of Hurricane Katrina. In conducting the assessment, CDC/ATSDR and EPA collaborated extensively with a diverse group of federal, state and local officials with expertise in public health and the environment, including the New Orleans City Public Health Department, the Louisiana Department of Health and Hospitals, and the Louisiana Department of Environmental Quality.

The taskforce identified 13 environmental health and public health infrastructure issues to address. This initial assessment includes drinking water, wastewater, solid waste/debris, sediments/soil contamination (toxic chemicals), power, natural gas, housing, removal of flood water, occupational safety and health/public security, vector/rodent/animal control, road conditions, underground storage tanks (e.g., gasoline), and food safety. The report also identifies a number of barriers to overcome and critical decisions to make prior to reinhabiting New Orleans. The mayor and city officials who will make these decisions will be able to draw on the expertise of the participants in the Joint Task Force and other partners. Dr. Howard Frumkin, the new Director of ATSDR, was recently deployed to Louisiana to continue the Agency's work.

ATSDR also is participating actively in the Working Group on Environmental Impacts and Cleanup, which is part of the White House Task Force on Hurricane Katrina. The Deputy Secretary of HHS and the Deputy Administrator of EPA co-chair this working group. I have served as co-chair of the New Orleans Subcommittee of this group, and other ATSDR and CDC staff are members of the

Guidelines, Sampling, and Communications Subcommittees. The Working Group is particularly focused on policy issues related to Environmental Impacts and Cleanup, and has served as an important locus for inter-Agency discussions. The Environmental Health Needs & Habitability Assessment Joint Taskforce that I headed in Baton Rouge has now been consolidated within the New Orleans Zip Code Assessment Group; this interagency group is providing technical input by neighborhood or zip code on environmental issues related to the return of residents to New Orleans.

(2) Emergency Operations Center

ATSDR leadership and staff serve as incident managers; provide GIS mapping and services, tools we regularly use to identify areas of potential or actual chemical exposure; and subject matter expertise for public health and risk communication. For example, Dr. Tom Sinks, Acting Deputy Director of ATSDR, served as CDC's public health lead in the CDC Emergency Operations Center in Atlanta during the initial phases of the hurricane response. Captain Scott Deitchman, USPHS, M.D., ATSDR's Associate Director for Terrorism Preparedness and Emergency Response, has taken over in this capacity in the on-going CDC/ATSDR response.

As of September 23, 2005, at least 55 ATSDR staff have been deployed to Hurricane Katrina response activities in the CDC Emergency Operations Center or into field operations including the FEMA Regional Resource Command Centers and the HHS Secretary's Emergency Response Team. As an HHS agency, ATSDR has deployed many Commissioned Officers through the Office of Force Readiness and Deployment/Commissioned Corps Readiness Force.

Also, currently ATSDR regional representatives are located within the EPA Headquarters Emergency Operations Center (EOC), Washington, D.C., EPA Region IV EOC in Gulfport, Mississippi, EPA Region IV EOC in Atlanta, Georgia, Region VI Joint Field Office (JFO), Baton Rouge, Louisiana and in the EPA Region VI EOC, Dallas, Texas.

In addition, a significant number of staff at ATSDR headquarters in Atlanta have been supporting a variety of Hurricane Katrina response activities and back up those deployed into the field.

(3) Deployments to the field to assess potential for exposure to hazardous substances with adverse health impacts

A significant number of CDC/ATSDR staff members have been deployed into the field or serve as subject matter experts in the areas of toxicology, sanitation, food and water safety, vector control issues pertaining to aerial spraying of pesticides for mosquito abatement, evacuation center operations, emergency response, epidemiology, environmental engineering and public health infrastructure, community relations, public affairs, and health education.

In addition, ATSDR regional representatives in Mississippi and Louisiana are in the field with the EPA on scene coordinators investigating chemical spills and providing technical assistance as needed to resolve questions about the potential for exposure to hazardous chemicals, and to assist the CDC senior management official. ATSDR has been working with EPA to assess the condition of Superfund sites and other industrial sites in the affected areas, and will continue to participate in more detailed assessments in the future.

In the Joint Field Office in Baton Rouge, ATSDR staff is providing support to EPA field deployed staff, serving on the debris removal and health and safety committees formed by FEMA, and assisting the environmental unit of the Louisiana Department of Health and Hospitals. In Texas, ATSDR regional representatives are coordinating with EPA at the Dallas EOC on sampling and chemical release issues.

ATSDR also is working closely with CDC and the New Orleans Public Health Department to re-establish basic public health services to the residents of New Orleans at temporary facilities.

ATSDR will remain in close contact with federal, state, and local partners to ensure that the public health expertise of this Agency most effectively serves the needs of the people and the communities in the affected areas. ATSDR will continue to provide technical assistance on issues related to potential exposure to hazardous substances by the public and response workers. We anticipate this need will continue for at least several months. Additionally, ATSDR will continue to address issues related to the assessment of potential health effects resulting from exposure to hazardous substances in the environment.

Amidst the hurricane response work, ATSDR continues to focus resources on priority Superfund activities. ATSDR is continuing to pursue these activities, but recognizes that there may be some delays as a result of on-going deployments and hurricane-related support. ATSDR is taking steps to minimize disruption to other parts of its program.

Thank you for the opportunity to talk to you today about ATSDR's participation in the response to Hurricane Katrina.

At this time, I welcome your questions.

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http://www.bt.cdc.gov/disasters/hurricanes/katrina/pdf/envassessment.pdf

ENVIRONMENTAL HEALTH NEEDS AND HABITABILITY ASSESSMENT

Joint Taskforce, Centers for Disease Control and Prevention & U.S. Environmental Protection Agency, September 17, 2005

EXECUTIVE SUMMARY

Hurricane Katrina made landfall on Monday, August 29, 2005, as a category 4 hurricane and passed within 10 to 15 miles of New Orleans, Louisiana. The storm brought heavy winds and rain to the city, and the damage breached several levees protecting New Orleans from the water of Lake Pontchartrain. The levee breaches flooded up to 80% of the city with water reaching a depth of 25 feet in some places.

Among the wide-scale impacts of Hurricane Katrina, the storm caused significant loss of life and disrupted power, natural gas, water, and sewage treatment, road safety, and other essential services to the city.

Early in the disaster response and recovery, federal, state, and local elected officials and public health and environmental leaders recognized the significant role of environmental health in the post-hurricane rebuilding of New Orleans.

At the request of the Secretary Michael Leavitt of the Department of Health and Human Services (DHHS) and Administrator Steve Johnson of the U.S. Environmental Protection Agency (EPA), the Director of the Centers for Disease Control and Prevention (CDC), Dr. Julie Louise Gerberding, created the Environmental Health Needs Assessment and Habitability Taskforce (EH-NAHT). The taskforce was charged with identifying the overarching environmental health issues faced by New Orleans to reinhabit the city.

The EH-NAHT collaborated extensively with a diverse group of federal, state, and local partners, including the New Orleans City Public Health Department, the Louisiana Department of Health and Hospitals (LADHH), and Louisiana Department of Environmental Quality (LDEQ), Federal Emergency Management Agency (FEMA), and U.S. Army Corps of Engineers (USACE).

The team was guided by the following questions:

1. What are the core or fundamental environmental health issues to be addressed;
2. Which agencies and organizations at the federal, state, or local level are responsible for, or involved in, the various environmental health issues;
3. What progress has been made and what challenges exist;
4. What is the timetable to address these environmental health issues;
5. What resources exist or need to be brought to bear to address these environmental health issues; andWhat are the key milestones and endpoints that define success.

The team identified 13 environmental health issues and supporting infrastructure to address. This initial assessment included drinking water, wastewater, solid waste/debris, sediments/soil contamination (toxic chemicals), power, natural gas, housing, unwatering/flood water, occupational safety and health/public security, vector/rodent/animal control, road conditions, underground storage tanks (e.g., gasoline), and food safety.

After the initial assessment, the EH-NAHT categorized these issues by increasing time and complexity to full restoration of services (Level 4, most complex and requiring the most time to restoration). Part of the complexity relates to how specific and explicit the criteria for the end points are for each function.

Level 1

- Unwatering
- Power
- Natural Gas
- Vector/Rodent/Animal Control
- Underground storage tanks (e.g., gasoline)
- Food Safety

Level 2

- Drinking Water
- Wastewater
- Road Conditions

Level 3

- Solid Waste/Debris
- Sediments/Soil Contamination (Toxic Chemicals)

Level 4

- Housing

Occupational safety and health as well as public security was identified as cross-cutting all the other areas.

Long-term solutions to these many issues are critical to allow resumption of normal life in New Orleans and to prevent reoccurrence of such an event in this area.

The EH-NAHT has the following conclusions based upon our initial assessment:

- **A complex array of environmental health problems exists in New Orleans.**

  The most striking feature of the disaster is the array of key environmental health and infrastructure factors affected all at once. All key environmental health and related services are being reestablished, and this work needs to be done in a very coordinated and well-planned way.

- **The unwatering of New Orleans is a critical first step.**

  The unwatering is an essential first step to allow access for assessment and repair of all basic services and habitability barriers. Some significant assessments are not yet started because of the continued unwatering, which could take an additional 4 weeks to complete. These assessments may impact the timing, resources and scope of the needed repairs/replacements.

- **It is important to bring infrastructure systems in New Orleans back on line.**

  Different timeframes are necessary to bring the various infrastructure systems (e.g., drinking water, wastewater, power, and natural gas) on line with varying degrees of capabilities. Restoring drinking water systems and wastewater treatment systems needs a planned approach, but full restoration will be delayed by the many breaks in the distribution and collection systems and by the need for upgrade and repairs in older systems. Unanticipated delays must be kept in mind in the process of unwatering and the scope and complexity of the interdependent systems.

- **The cleanup of debris (including housing debris) and potentially contaminated soil/sediment in New Orleans are rate-limiting factors.**

  The timeline for debris treatment, disposal, containment, and transport, as well as for the testing of potentially contaminated soils/sediment, will slow or accelerate the rate at which the city can be reinhabited. The potential contamination of soils/sediments has great uncertainty attached to it. A comprehensive sampling and testing of a broad array of toxic chemicals will be required to identify any widespread contamination or selected hot spots and to ensure the safety of returning inhabitants or for redevelopment.

- **Intense interest will exist to reinhabit New Orleans.**

  Significant pressure will occur to allow rehabitation. A single decision will not be made to reinhabit the whole city at one time. Rehabitation is expected to be done neighborhood by neighborhood IF it is possible to prevent access to the closed areas of the city. Worker safety and health as well as public safety and security are mandatory enablers for all of the activities.

- **It is critical to address the housing issues in New Orleans.**

  Housing is likely the most critical issue in reinhabiting the city because of the

  - Large percentage of city housing that was flooded and is not likely to be viable;
  - Intense personal connection an individual has to their home;
  - Legal, jurisdictional, and procedural issues involved in the decision-making process;
  - Large proportion of the city population that is displaced. Some residents are a significant distance away from New Orleans or may not intend to return;
  - Difficulty in establishing and maintaining communications with the widely dispersed population;
  - Challenge of identifying acceptable methods and resources for assessing such a large number of homes; and the
  - Scope of the demolition process and safe and efficient removal of debris.

- **An immediate need exists to allow temporary or transient entry of recoveryworkers, residents, and business owners.**

  In the immediate period, explicit guidelines are being developed for safe entry of recovery workers to New Orleans, for brief entry by residential and business owners to retrieve key household or business items in neighborhoods of the city

where it is safe to do so, and for reinhabiting the least impacted areas of the city where key environmental health and infrastructure conditions are met.

- **Ensuring worker safety and health and public safety and security are essential.**

  Public security and intensive efforts to achieve worker safety and health for the very large recovery workforce, working often in extraordinarily difficult and challenging conditions, is essential to rebuilding New Orleans.

- **The criteria for short-term and long-term return to New Orleans should be tailored to the timeframe and population.**

  Different criteria will be necessary for the short-term and long-term return to the city e.g., use of bottled water in the absence of potable water will be acceptable for recovery workers and select others on a limited short-term basis versus the general population, which includes children and the elderly over the long-term).

The EH-NAHT has the following recommendations based on our initial assessment:

- **It is important to involve state, local, and other stakeholders in decision-making.**

  All the issues in reinhabiting New Orleans are interwoven, complex, and cannot be addressed individually. It is extremely important that decisions are made involving state, local, and federal staff as well as all other stakeholders, particularly the local population.

- **Developing a shared vision for the rebuilding (including infrastructure) is critical.**

  Because of the magnitude of the devastation, it is critical that decisions be guided by a clear, shared vision by all stakeholders of what the rebuilt New Orleans should be. As devastating as this event is, the vision of the future of the city is critical in guiding development for such a widely impacted area.

- **Federal, state, and local decision-makers should explore processes used by other areas in devastating circumstances.**

  New Orleans should draw upon the experiences of other localities that addressed devastating events—areas such as New York (World Trade Center), Florida (repeated hurricanes), and San Francisco (earthquake). Their experiences and solutions might serve as examples to New Orleans on processes that can be used for creating a broad vision for redevelopment, for identifying key decisions and strategies, and for involving all stakeholders (including the displaced population) in the broad-impact, critical decisions that will have to be made.

- **Maintaining collaboration with involved agencies is essential.**

  Maintain, through FEMA and other mechanisms, broad collaboration and a true sense of partnership in developing a very coordinated and sustained effort to recovery.

- **Attending to the housing decisions is critical.**

  A number of critical decisions need to be made about housing. These decisions include

  - Developing explicit guidelines for entry by recovery workers, for brief periods of entry by residents and business owners to retrieve essential belongings, and for reinhabiting relatively undamaged neighborhoods of the city.
  - Creating a neighborhood-by-neighborhood approach for assessing housing, cleanup/demolition, and reinhabiting/rebuilding.
  - Selecting method(s) for assessing large amounts of damaged housing, with rapid methods necessary for severely damaged housing.
  - Resolving legal, administrative, and procedural issues.
  - Fostering and maintaining ongoing contact with the large displaced population—particularly for any actions that might require owner authorization.

- **It is necessary to maintain a systems-level perspective.**

  Monitoring the progress in all key areas of environmental health and infrastructure is important because reinhabiting New Orleans depends on success in all areas. This initial assessment identified 13 key areas that need to be tracked.

- **Resolving potential toxic chemical exposures is important.**

  It is important to resolve the questions about the potential for toxic chemical exposure as quickly as possible. This issue has the widest degree of uncertainty.

- **Officials should ensure public safety and security and worker health and safety.**

  Maintain a central focus on public safety and recovery worker health and safety throughout the rebuilding of New Orleans.

- **Engage and communicate with the displaced population.**

Develop a mechanism to regularly and substantively engage and communicate with the displaced population to provide a progress update on city-wide activities as well as activities related to neighborhoods and individual homes. This work could involve the use of GIS, the Internet, and other innovative strategies.

- **Maintain a broad vision on issues affecting the rehabitation of the city.**
  This initial assessment from the EH-NAHT focused on the immediate issues related to reinhabiting the city—primarily those issues that affect essential systems for safe living. As these immediate issues are dealt with, it will be important to focus on issues related to quality of life and social well-being and how they are integrated into a redevelopment plan.
- **Create a long-term habitability strategy.**
  The long-term solution to the risk of flooding and the viability of New Orleans depend on fully protective levee and unwatering systems for the population returning to and reinhabiting the city. It is extremely important to address the long-term protection of the city from another such event of this magnitude.

Federal, state, and local agencies and relief organizations are responding heroically to the disaster. All organizations, including the agencies represented on this task force, should be doing their utmost to assist in recovery and rebuilding.

These conclusions and recommendations are current at the time of writing. Because the situation is dynamic and changing daily, updates on various topics will be given periodically by various organizations.

Mr. GILLMOR. Thank you, Dr. Falk, and next witness is the Honorable John Paul Woodley, Jr., Assistant Secretary of the Army Civil Works.

STATEMENT OF JOHN PAUL WOODLEY, JR.

Mr. WOODLEY. Thank you, Mr. Chairman. Thank you, Mr. Chairman, distinguished members of the subcommittee. I have a brief oral statement, and ask that my written statement be included in the record.

Mr. GILLMOR. It will be so included.

Mr. WOODLEY. Today, I am here to provide a brief background update to the subcommittee on the environmental management techniques the Army Corps of Engineers is using during the ongoing unwatering, debris removal, and cleanup missions in the greater New Orleans area.

Working with the city of New Orleans Water and Sewer Board, private contractors, and even some foreign governments, Mr. Chairman, the Corps continues to make steady progress on pumping out floodwaters from the city of New Orleans. The current estimate is that the city is more than 80 percent unwatered, but the overall unwatering estimated to be finished in early to mid-October, with a number of parishes actually completed by tomorrow.

As the water drains to its final amounts, there may be more concentrated levels of contaminants that will require special attention and handling. The Corps is coordinating with EPA and State agencies regarding this possibility. An interagency technical group identified recommendations for preventive and remedial mitigation management actions during unwatering. The Corps has deployed booms at appropriate intake points, and I have a photograph of the boom deployed on the 17th Street Canal for the committee. The orange boom is the boom that is intended to collect the debris. The white and somewhat discolored boom is actually an absorbent boom that will absorb floating contaminants, and skim floating contaminants from the water. We have also deployed artificial aeration devices in the major channels. This is a photograph of that at the London Avenue Canal. This is intended to aerate the water, and

provide treatment for low levels of dissolved oxygen and also provide the treatment benefits that aeration will provide.

After suspending pumping operations during Hurricane Rita, the Corps resumed the aeration operations, and is coordinating with the U.S. Coast Guard to deploy additional booms, skimmers, and suction at pumping stations where oil has been observed. Based on input from EPA, as Deputy Secretary Peacock indicated, the Corps is also addressing bacteria, suspended solid, and petroleum in the storm water runoff.

In support of FEMA, the states, and communities, the Corps is also conducting an extensive debris removal effort in the areas impacted by Hurricane Katrina. There is a very strong communication among Federal, state, and local agencies associated with this mission. The Corps also participates in a multi-agency working group established by the EPA to coordinate innovative debris management issues for recycling and reuse.

With respect to household hazardous waste, the Corps and the EPA are assisting, collecting, and disposing of this material. Again, the Corps is working closely with State and Federal regulators on matters dealing with all types of debris, including contaminated debris. As public rights of way are cleared, and segregation of materials at curbside and staging areas gets in full swing, recycling will increasingly become a key component of debris strategy. Light goods, automobiles, marine vessels, and clean, woody debris should be common targets for recycling. Recycling can be effective in reducing the volume of debris, and reducing the impact on landfills.

The Corps is implementing preventive management actions during pumping to minimize additional ecological impact during the balance of the unwatering effort, and also, is implementing remedial management actions into the receiving waters to continue to minimize ecological impacts of the floodwater discharge. And we will continue to work with EPA, State and local authorities to plan and manage potentially contaminated residuals following the first flush of the region following the rainfall. The current promising outlook for environment and health, human safety and health, would not be possible without the combined efforts of EPA, other Federal, state, and county agencies, as well as the Corps of Engineers.

And Mr. Chairman, thank you very much for you, and to the subcommittee for the opportunity of appearing today.

[The prepared statement of John Paul Woodley, Jr. follows:]

PREPARED STATEMENT OF JOHN PAUL WOODLEY, JR., ASSISTANT SECRETARY OF THE ARMY CIVIL WORKS, DEPARTMENT OF THE ARMY

INTRODUCTION

Mr. Chairman and distinguished members of the subcommittee, I am John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works). I am honored to be testifying before your subcommittee today, on the environmental aspects of the United States Army Corps of Engineers' recovery activities related to Hurricane Katrina. My testimony today will provide a brief background and update the Subcommittee on the environmental management techniques the Corps of Engineers is using during the on-going unwatering and debris removal and cleanup missions in the greater New Orleans area. These efforts are a collaborative effort of the Corps of Engineers, the U.S. Environmental Protection Agency, the Louisiana Department of Environmental Quality, the Sewage and Water Boards, Louisiana Department of Health

and Hospitals and contractors to ensure impacts upon human and environmental well-being are minimized to the greatest extent possible.

BACKGROUND

The Corps of Engineers is doing everything it can to get the water out of New Orleans as quickly as possible, in an environmentally acceptable manner. Everyone is concerned about the quality of water being moved from New Orleans to Lake Pontchartrain, but the first priority is health and safety of residents of New Orleans and all responders as water is drained from the city. The Corps is working with the EPA, including its on-scene coordinator, and state agencies to ensure human health and safety. EPA is continually monitoring and testing the water. Corps of Engineers personnel in New Orleans and Baton Rouge are co-located with the EPA and the Louisiana Department of Environmental Quality, and other state agencies since shortly after Katrina to facilitate close interaction and coordination. The headquarters and forward field offices of the Corps and EPA are fully engaged in this collaborative effort.

STATUS OF UNWATERING MISSION

Working with the city of New Orleans Water and Sewage Board, private contractors and even some foreign governments (Dutch and German dewatering teams), the Corps of Engineers continues to make steady progress on pumping out floodwaters from the city of New Orleans and immediate vicinity into Lake Pontchartrain. The current estimate is that the New Orleans area is more than 80 percent unwatered, with the overall unwatering effort estimated to be completed in early to mid-October, with a number of parishes completed by September 30th. As the water drains to its final amounts, there may be more concentrated levels of contaminants that will require special attention and handling. The Corps is coordinating with EPA and state agencies regarding this possibility. The unwatering effort will remove most, but not all the water. The remaining isolated pockets of water should not hamper recovery efforts such as debris removal, structural assessments and restoration of critical services.

PREVENTATIVE AND REMEDIAL MANAGEMENT ACTIONS

An interagency technical sub-group (water quality/ecosystem restoration management experts) collaboratively identified an array of recommendations for preventative and remedial mitigation management actions during unwatering for both inside and outside the levees. Inside the levees the Corps has deployed sorbent booms with sorbent skirts at appropriate intake points. There is a special management strategy for appropriate containment and treatment of HOT-SPOT areas identified by personnel on the ground as the water lowers. Though most of the City is dry, the Corps still is treating water in the three main canals, Orleans, London and 17th Street. The Corps has deployed artificial aeration devices in major channels to reduce biological oxygen demand (BOD) and support healthy dissolved oxygen concentrations in the water column. Two aerators in each of the three main channels draining to Lake Pontchartrain were strategically placed and operating successfully prior to Hurricane Rita and 20 more aerators are being placed in these and other strategic locations, even in the outfall areas of Lake Pontchartrain. More aerators also are being planned—about an additional 20, or total of 40. After a suspension of pumping operations during Hurricane Rita the Corps has resumed the aeration operations, and are coordinating with the U.S. Coast Guard to deploy booms, skimmers, and suction at pumping stations where oil was observed. Based on input from EPA, the Corps is doing its best to address bacteria, suspended solids, and petroleum in storm water runoff. Options include more booms, silt screens, aerators, and possibly adding some mobile treatment plants. EPA and the Corps are formulating approaches to manage known and suspected areas of hazardous materials production and storage, and areas with contaminant sequestration materials such as flocculation, disinfection, and sorption. The Corps is working with EPA who is developing a comprehensive non-point source control program to manage the first flush of rainfall from contaminated residuals as well as developing and executing program to clean streets, canals, storm drains of contaminated residuals to minimize their flushing from receiving waters during rainfall events. This approach is being formulated collaboratively between the Corps and EPA to be coordinated with State and Local governments and water boards.

In addition to the floodwaters, the EPA and State of Louisiana are sampling and monitoring the sediments left behind from the New Orleans floodwaters for possible contaminants and infectious agents. Appropriate sampling and analysis are critical to effective evaluation and characterization to assure proper handling and disposal.

The Corps and its contractors are working closely with the EPA and the state of Louisiana to assure that this is achieved in a safe manner.

WATER QUALITY RESULTS

EPA emergency response personnel are working in partnership with FEMA and state and local agencies and the Corps to help assess the test results and evaluate health and environmental conditions related to water quality from Hurricane Katrina. In emergency situations such as this, EPA serves as the lead Agency for water quality including the cleanup of hazardous materials such as oil and gasoline. EPA national and regional Emergency Operations Centers are currently activated 24 hours a day. The Corps has employees embedded with the EPA/LDEQ team in Baton Rouge and onsite teams locally in New Orleans for rapid and effective communication regarding water quality issues.

More than 190 water quality data parameters are constantly being updated, reviewed and validated through an EPA quality assurance process to ensure scientific accuracy. Fuel oils, as they are encountered, are being skimmed by floating booms or other pick-up mechanisms as monitored by the Corps, EPA, LDEQ and Coast Guard, but contact with fuels and oils absorbed onto sediment is always a possibility. With any of these water quality constituents, it is recommended that contact with the area water be avoided, and if contact is made, use soap and water to clean areas and remove contaminated clothing.

The Corps teams in the field and at the Baton Rouge office will continue to follow interagency guidance and accepted doctrine and continue working collaboratively with the entire suite of human health agencies to respond to health and human safety issues. The Corps will follow OSHA/CDC guidance pertaining to human health and safety risk associated with New Orleans floodwaters, sediment and related microbial issues and continues to operate in the field under that guidance and its internal guidance for emergency work zones.

DEBRIS MANAGEMENT PLAN

In support of FEMA, the states and localities, the Corps is conducting a comprehensive debris removal effort in the areas impacted by Hurricane Katrina. There is very strong interagency communication between the federal agencies, states and local agencies both vertically and horizontally. Additionally, the Corps is a participant in a multi-agency working group established by the EPA that meets twice weekly to coordinate innovative debris management issues such as recycling and reuse. That working group also includes state and private non-profit and for profit entities. An output of this coordination is management plans (by state) for hazardous materials and other debris.

With respect to household hazardous waste, while the collection and disposal of this material is an Emergency Support Function (ESF)-10 task, it is being conducted by both the Corps and EPA. We expect that most hazardous and toxic waste will consist of containers filled with fuel oil and propane tanks, containers of unidentified material, paint, pesticides, spoiled food, freon removal and batteries. The Corps is working closely with state and federal regulators on all matters dealing with all types of debris including contaminated debris

As public rights of way are cleared and segregation of materials at curbside and at staging areas gets in full swing, the Corps realizes that recycling will increasingly become a key component of the debris strategy. White goods, automobiles, marine vessels, and, in areas not impacted by the Formosan Termite, clean woody debris should be common targets for recycling. Recycling can be effective in reducing the volume of debris and reducing the impact on landfills.

CLOSING

The Corps is implementing preventative management actions during pumping inside the levees to minimize additional ecological impact during the balance of the unwatering effort. The Corps also is implementing remedial management actions in the receiving waters to continue to minimize the ecological impacts of the discharge of flood waters. The Corps of Engineers is seeking a balance between pumping all the water out of the city and minimizing ecological impacts during the unwatering process. Strategies are being developed by the Corps and EPA to manage the post-pump down flushes of potential pollutants and potentially contaminated residuals. The U.S. Army Corps of Engineers appreciates the tremendous cooperation of the EPA, Coast Guard, Louisiana Department of Environmental Quality and other local officials and agencies to carry out all of our public works missions under Emergency Support Function #3. The current promising outlook for the environment and

human safety and health would not be possible without the combined efforts of all that were mentioned.

This concludes my statement. Again, I appreciate the opportunity to testify today. I would be pleased to answer any questions you may have.

Mr. GILLMOR. Thank you very much, Mr. Woodley. And also, we, at this hearing, as we always do, are probably going to run out of time for questions. I would appreciate it if you would be willing to answer any questions in writing that might be submitted later. Thank you.

Mr. WOODLEY. Delighted.

Mr. GILLMOR. We have been joined by the chairman of the full committee, the gentleman from Texas, Mr. Barton, for questions.

Chairman BARTON. Thank you, Chairman Gillmor, and I will say at the outset that I think this is one of the most important hearings of all the hearings we are going to do on the aftermath of Katrina and Rita, because this directly impacts public health, and it is not the sexiest hearing, but I think it is one of the most important hearings.

I want to thank you three gentlemen for being here, and the other panelists in the second panel. My first question would be to Mr. Peacock and also to Dr. Falk. Given what we know today about the status of the contaminants in the water that is in the flood areas, or the areas that have been flooded, are there any long-lasting, negative health effects of those areas, once the waters recede?

Mr. PEACOCK. Well, Dr. Falk, I will let you, perhaps, grab that first.

Mr. FALK. You know, I think there are several factors we have to consider. The potential for any long-term effects depends on the degree of exposure, and I think it is very important, as we work through this process, to assess carefully exactly what the exposures are, and how significant they are.

So first off, there is the issue of the floodwaters, which have contained, as Deputy Administrator Peacock pointed out, bacteria from sewage, and it has contained some chemicals, and then, there is material in the sediments as that dries out, and I think it is particularly important to think of how long people will be exposed to those sediments. Are those readily cleaned up, so that the exposures are short-lived, and in which case, they would not be, you know, as significant for the long term?

But I think also, one has to think of the broad area sampling, that there are a lot of neighborhoods in an area such as New Orleans. There are maybe localized exposures from submerged sites, and I think it is important to actually fully assess the area, and determine whether there are significant exposures on an ongoing basis. So I think from what we have seen so far, I don't think we would be able to say that there are definite long-term effects, but I think it is important both for us in assessing, and for everybody who lives there, to be reassured that that sampling be comprehensive, that it fully look at, particularly in areas where there might have been localized exposures, for example, a Superfund site. We really have to look at this, I think, in an intelligent fashion, to make sure there aren't ongoing, persistent exposures that affect people for the long term.

Chairman BARTON. Dr. Peacock.

Mr. PEACOCK. Yes, Emily, if you could put up the flood sampling map, where the samples have been taken. Dr. Falk touched on the important issues. There has been a lot of sampling of the floodwaters done, but the fact of the matter is, in any particular instance, you may have contaminants that may have not been caught by the sampling. Also, you can see this is based on a scientific sampling method where we not only try and get a representative sample, but also focus on particular sites where we think there may be a problem. But you can see that, by no means, is the entire area covered. We may not know the chronic effects for quite some time.

Chairman BARTON. Okay. Is there anything that we need to do at the Federal level, in terms of reestablishing safe drinking water supplies, in terms of special funds for new purification plants, or anything like that?

Mr. PEACOCK. Well, right now—and Emily, if you would put the drinking water plant map up. I am not sure the chairman was here to see that. All those dots represent drinking water plants. The green dots are plants we know are operational. These were plants in the swath of Hurricane Katrina, but the red dots and the yellow dots are plants where we know there is a problem, or where we don't know whether things are right. And in each of those cases, there is a team of people, including EPA and State and local officials. I know CDC and the Corps of Engineers send teams of people to each of these plants to do assessments, and it is not just the plant, but it also includes the distribution system, and it is going to be very difficult to figure out what the needs are until those assessments are done. And I think the time period for that is measured more in weeks than it is in days.

Chairman BARTON. My final question is to Mr. Woodley. I am told that back in the early 1960's, Congress has approved the Corps to build a hurricane-barrier project across Lake Pontchartrain, and that got held up by some environmental lawsuits. Finally, the Corps just gave up on it, but that had been project been completed, it has at least been alleged that we wouldn't have had the flooding in New Orleans. Can you comment on that?

Mr. WOODLEY. Mr. Chairman, there was litigation concerning an original 1960's-era plan, that was advanced by the Corps of Engineers, and there was an injunction issued by the Federal Court in New Orleans against elements of that plan, which included a hurricane barrier, or storm surge barrier at the mouth, or the outlets of Lake Pontchartrain. Subsequent to that time, for that reason, and also, because of very substantial local opposition that existed, that element of the plan was rejected, and a new plan formulated that called for higher levees along the shore of Lake Pontchartrain.

Chairman BARTON. But if that plan had been implemented, has the Corps or anybody else modeled what would have happened with this hurricane?

Mr. WOODLEY. No, sir. We have not. And——

Chairman BARTON. Is that something you could do?

Mr. WOODLEY. I believe that that is something that——

Chairman BARTON. If this committee——

Mr. WOODLEY. [continuing] could be done.

Chairman BARTON. [continuing] directed that it be done.

Mr. WOODLEY. I believe that that is within our capability of modeling the effect of that, the storm that would, that occurred on a hypothetical system of that nature. I believe that could be done, Mr. Chairman.

Chairman BARTON. My time has expired. I thank the Chairman.

Mr. GILLMOR. The gentleman from Texas, Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman. Dr. Falk, first, I would like to thank both the CDC and the HHS, because it was amazing in Houston when we first received 150,000-plus evacuees from Louisiana, and the effort on the ground from the CDC, and also, from the Public Health Service. I just couldn't tell you how many I met. It seemed like it was a couple dozen of folks, both at the quick medical facility at the Reliant Arena area, and then, later on, at the George R. Brown a couple days later.

One of my concerns that day was we found out that the folks that were being triaged, because again, Houston area had no idea who was on the buses, or what illnesses they had, is the vaccinations that we were doing, you know, when people came off those buses, any kind of vaccines to protect both the evacuees, but also, for the medical personnel that were there trying to treat them. And is there a certain list that you know of, or what vaccinations you consider most important, both for the evacuees, but also for the workers in the shelters and those on the ground, affected even those folks who were still, are in the New Orleans area?

Mr. FALK. Thank you very much, and I know Dr. Gerberding spoke to the Health Subcommittee last Thursday, and she has spoken to much of the CDC effort on the public health response, and broadly is supporting the shelters, the local medical facilities, and the guidelines.

I think, in particular, the greatest concern, I know for all of us who went there, we all had to have, you know, diphtheria, tetanus shots, and so Dr. Gerberding, I think, has testified to that, and spoke exactly to those recommendations.

Mr. GREEN. Because I wasn't here. I actually went home——

Mr. FALK. Yes.

Mr. GREEN. [continuing] to prepare for Rita.

Mr. FALK. Yes.

Mr. GREEN. I know tetanus was the biggest concern, but——

Mr. FALK. Right. That is the main concern, and I think in selected areas, there have been questions about hepatitis, but I think it has been particularly in terms of the tetanus. And I could get back to you exactly the guidance that they use in all of the shelters.

Mr. GREEN. Okay. I would appreciate it.

Mr. FALK. We have had, I think, roughly 500-plus people from CDC, ATSDR, that have participated in those various efforts across the Gulf Coast region.

Mr. GREEN. I have to admit, I wanted to clone that clinic that was put together on a day's notice at both facilities, and move it into our district, because I was impressed at both locally and all our hospital systems, and medical schools, and again, the Federal effort from the CDC and the Public Health Service.

Mr. Woodley, I mentioned in my opening statement about our experience with Rita with water plants, and of course, I know in Mis-

sissippi and Louisiana, it was much worse, because our problem was the electricity to the reservoir, that they couldn't send the water, you know, to Baytown, and ultimately, to the residents and the industry. Does the Corps work directly with this critical infrastructure? In fact, I think the Wallisville Reservoir is originally a Corps project, and if so, what steps does the Corps go through to respond to problems like we saw with this, and again, it is probably magnified so much more in the Louisiana and Mississippi area?

Mr. WOODLEY. Yes, sir. We have the mission under the National Response Plan to provide temporary emergency power for critical infrastructure.

Mr. GREEN. Do you have to get anybody's permission to do that? Local, State officials, or even FEMA?

Mr. WOODLEY. Yes, sir. We produce, or we perform that mission under the direction of FEMA and in cooperation with the local emergency management agencies and local authorities.

Mr. GREEN. Mr. Chairman, I would hope that we might be able to somehow speed that decisionmaking along, because one of our problems we found was that the local community, for example, the mayor, the city manager had to go to the State, and the State was dealing with such a big issue, but somehow, we can short circuit that process that you have to go through, so the Corps could actually be more responsive, and I know you want to be, but you still have to go through everything that is required, and I would hope one of the things we learn out of this is we need to short circuit some of the bureaucracy, so the people who can actually get the job done have that opportunity to get out there, without 3 or 4 or 5 days delay. And I would assume the mayor from Mississippi, and I apologize for him having to sit through the first panel, but I know that is the frustration that my local community feels, and again, we weren't devastated near—our problems are nowhere near what Mississippi and Louisiana did.

Thank you, Mr. Chairman.

Mr. GILLMOR. Thank you. I have a question for Mr. Peacock. There have been some stories in the press stating that the EPA Administrator, Mr. Johnson, has said that the agency does not need any other authority to respond to the disaster in the Gulf Course, or the Coast, or the situation that is created, but there have been some other press articles suggesting that, in fact, EPA would be seeking some additional authority.

Could you tell me what the position of the agency and the administration is as to whether you need additional legislative authority?

Mr. PEACOCK. Sir, absolutely, Mr. Chairman. Not long after the hurricane hit, we started looking at, particularly given its scope and its unprecedented impact, started looking at whether or not there were any legislative barriers to getting our work done. And we continue that effort. We have not offered, or sent up, any legislative changes or additional authorities that we think we need yet, but we continue to review whether or not that may be necessary.

Mr. GILLMOR. Well, along that line, let me ask you, after the activities of September 11, Congress created specific legislative authority to help EPA guide drinking water, utilities, in getting ready to prevent and respond to terrorism activities. My question is, do

you have similar direct authority you can draw on for natural disasters, like a hurricane, a tornado, or do you rely on just cobbling together authorities under various provisions?

Mr. PEACOCK. Yes, I think you are probably referring to the Water Sentinel Program, which helps in assessments, first of all, and then helps local water authorities determine ways to protect water supply sources, and drinking water plants. I am not aware of any similar authority for natural disasters, but I can certainly double check on that and get back to you.

Mr. GILLMOR. Thank you very much. I appreciate that. Dr. Falk, what are your recommendations for State and local officials, with respect to health and safety issues, as they consider allowing residents back into New Orleans or other areas, and how do you go about communicating those recommendations?

Mr. FALK. So, we feel that there are a number of factors that have to be considered, and this is a very complex environmental situation, where there are issues with drinking water, sewage treatment, chemicals and sediments, housing issues, mold, and debris removal, and so on. So, I think first off, you know, there is a sense, for say in local officials, you have to consider the group of these various effects at, you know, the decisions about return and so on are not based on a single criterion, or a single issue. One really has to make sure that the complex number of services that are sort of necessary for urban living, or whatever, really are met. So, in that sense, we try to emphasize going through the series of issues and actually making sure that they are all addressed.

Second, the conditions vary. For example, within New Orleans, they vary from one part of the city to the next, and so, we have emphasized this is not like a single decision for a whole metropolitan area, but this really has to be done, in a sense, neighborhood by neighborhood, area by area, as the conditions differ from site to site. So, and we have, you know, tried to emphasize approaching it systematically, for the different environmental issues, and addressing those, and approaching that by the particular areas, and the particular problems that are represented in each area.

Through EPA and ourselves and others, we have tried to set up a Federal effort whereby we can discuss between the agencies how we collectively come up with information on those areas, and provide that technical input up the chain at the Federal level, and working with our colleagues at the State and local levels, so we are trying to share information that we have, and provide technical input, and make sure that we are able to convey whatever information we have that would be helpful.

Mr. GILLMOR. Thank you. One more question for EPA, Mr. Peacock. One of the sadder stories of the elevated lead concentrations we had in drinking water in the District of Columbia, was how badly the City Water and Sewer Administration had bungled its public outreach efforts, particularly threat communication and water testing and water purifying kits.

You had mentioned that EPA is trying to both communicate information and distribute water testing kits in the affected parishes in Louisiana. Would you be able to tell us what parishes and how many, and what EPA is doing to program for threat communication and kit testing?

Mr. PEACOCK. Yes. And actually, a lot of this work is being done by EPA and the state. Once again, there is just a very close relationship there. I know there were, and this information is now a few days old, so I will have to update it for you, there were at least 700 test kits that were handed out. There were also purification tablets for people who had private wells, which I believe the State gave to people.

The interesting aspect of this is one of the lessons learned from 9/11 is to improve risk communication, and particularly, try and reach the people that need to get the information. We are now communicating through AM and FM radio, by going door to door, handing out flyers, and working through neighborhood networks such as churches, local school districts, and other means, to try and reach people.

But Mr. Chairman, I can get the detailed information regarding test kits to you after the hearing.

Mr. GILLMOR. Thank you very much. The gentlelady from California.

Ms. CAPPS. Thank you, Mr. Chairman. Dr. Falk, I have two questions for you, and one for you, Mr. Peacock, so of necessity, I would hope that your answers would be brief.

The emergency responders, Dr. Falk, to Hurricane Katrina, have been and will continue to be exposed to extremely dangerous environments since the first day of rescue operations, wading through contaminated waters filled with sewage and hazardous materials. Following 9/11, the Federal Government created a medical monitoring program for responders to the World Trade Center tragedy.

Last week, I asked Director Gerberding if the CDC will be setting up a long-term monitoring program for responders to Katrina. She expressed openness to such a program, but indicated they have not taken any steps in that direction. I would ask you, does ATSDR intend to create a health registry for first responders?

Mr. FALK. I think in terms of Dr. Gerberding's response, clearly over the last several weeks, there has been a large effort on the part of NIOSH, the National Institute for Occupational Safety and Health, which is a part of CDC, to provide guidance for emergency response workers and others in the area.

Ms. CAPPS. I am talking about a registry.

Mr. FALK. Right. And as she said, then, they have not made any decisions in terms of a registry.

Ms. CAPPS. And that is still the case?

Mr. FALK. And I think, in terms of ATSDR, we primarily work around hazardous waste sites, particularly with the communities, and the active work at CDC that relates to workers is really done through the National Institute of Occupational Safety and Health. So, I think the most likely place where that would be considered would be where the occupational safety and health expertise is located, and that would be probably at the NIOSH portion, so that is where that is likely to be considered.

Ms. CAPPS. Okay. Next question. The Joint Taskforce, Dr. Falk, on Environmental Health Needs and Habitability Assessment, issued on September 17, 2005, was a useful and helpful document on understanding the issues related to the Katrina response. One of the key issues identified that affects the rate at which New Orle-

ans can be re-inhabited is the testing of potentially contaminated soil. The report calls for, "a comprehensive sampling and testing of a broad array of toxic material, that will be required to identify any widespread contamination of selected hotspots." In your opinion, is there a comprehensive sampling and testing plan that is fully funded, either yours, or one that you know of?

Mr. FALK. I think that at this point, we are working closely with the EPA. We are evaluating the information so far. We are looking at the sampling plans, and I think Deputy Administrator Peacock has described, you know, their development of sampling plans, and having them reviewed. We are in the process of working with them on the sampling plan.

Ms. CAPPS. Okay.

Mr. FALK. So, my hope is that we will, you know, we will be able to answer that question.

Ms. CAPPS. So the answer is no right now. And like, I am thinking of a specific citizen or a family.

Mr. FALK. Right. Right.

Ms. CAPPS. They don't know yet whether it is actually, literally, safe to return to their neighborhoods without short or long-term health effects?

Mr. FALK. I think that is something we are all working on now, and you know, it has only been so recently that some of the areas of New Orleans, for example, have been unwatered.

Ms. CAPPS. And they are returning. Okay, Mr. Peacock. Under statutes like the Solid Waste Disposal Act and Superfund, the EPA is charged with protecting public health. In the face of widespread oil and hazardous chemical release and contaminated sediments in neighborhoods, is it EPA's responsibility to protect the citizens' health? I am looking for——

Mr. PEACOCK. You are talking about a specific statute. I see. I see. If they are——

Ms. CAPPS. I am looking for primary responsibility. I just asked Dr. Falk similar kind of questions. Who is in charge?

Mr. PEACOCK. If you are looking at a person who wants to reoccupy——

Ms. CAPPS. Yes.

Mr. PEACOCK. [continuing] New Orleans, and who is protecting them. There are three layers of protection. There is the mayor. There is the Governor. And then, there is Thad Allen, all of whom are located in New Orleans, and have daily discussions regarding whether or not a particular—and the mayor is using zip code areas—whether or not a particular zip code area can, for instance, have businessmen come in on a daily basis, or perhaps, have residents come in on a daily basis.

Ms. CAPPS. Well, now, I have heard, and this is only anecdotal, but evacuees have reported that they are getting different information from different officials, and from the EPA. So——

Mr. PEACOCK. Well, I hope that is not the case.

One of the reasons those three people are in such close contact is to make sure they are all on the same page. The mayor, as you probably know, published a plan late yesterday, and we have, across agencies, it is not just EPA and the CDC, have been helping the mayor evaluate environmental and other endpoints in those

particular zip codes. And there is an updated assessment, I think it was issued, that was given to the mayor last night, which I would be happy to provide to you. I hope you have the impression there is a systematic process——

Ms. CAPPS. Right.

Mr. PEACOCK. [continuing] for looking across these areas.

Ms. CAPPS. I guess that, first of all, I don't have a clear answer as to whether the sample is complete, or if there is a registry——

Mr. PEACOCK. I think I can help you with that, if, for instance, for the sediment sampling, these are where we have taken samples. There is a sampling plan in place.

Ms. CAPPS. Is there a result?

Mr. PEACOCK. Yes. And if you go, for instance, on our website, and hit sediment samples, you will get the raw data. And——

Ms. CAPPS. Right. It doesn't tell the citizen if it is safe. Who is going to interpret the data, and issue a report saying it is——

Mr. PEACOCK. That is up to the local health official and the city's office, to determine whether or not a particular house or room or neighborhood is safe for someone to go back into. I mean, for instance, EPA, regardless of floods in the past, has never gone into a particular neighborhood, house, property, state, commercial property, and said it is safe to go back in.

Ms. CAPPS. Mr. Chairman, I know I am going over time, but could I finish this line of questioning? I just want to find out, the mayor, you have the capability of analyzing, between the Corps——

Mr. PEACOCK. Yes, and actually, the Corps and others.

Ms. CAPPS. And the Corps is—well, the three of you are here because of expertise in sampling, creating data bases——

Mr. PEACOCK. Correct.

Ms. CAPPS. [continuing] and information. I understand——

Mr. PEACOCK. Yes.

Ms. CAPPS. [continuing] that the dispensing of it and issuing the—yes, you can come, or no, you shouldn't, and here is why. Somebody else needs to do that, but——

Mr. PEACOCK. Right.

Ms. CAPPS. [continuing] how does the mayor, does he have access to your data? Is someone informing him——

Mr. PEACOCK. Yes, now this——

Ms. CAPPS. [continuing] on a regular basis?

Mr. PEACOCK. [continuing] is the zip code assessment group Henry was referring to in his testimony. There is a group of individuals down in New Orleans, Federal officials who, by zip code, are assessing—it is currently six key areas; it is going to be 13 key areas. And that information is provided to Thad Allen, who then provides it to the mayor and to the state.

Ms. CAPPS. And advises them, so that there is one, so there shouldn't be confusing information?

Mr. PEACOCK. There should not be confusing information.

Ms. CAPPS. They should know to whom they can go and that they can trust that this has been fully vetted information——

Mr. PEACOCK. That is right. In fact——

Ms. CAPPS. [continuing] and substantiated.

Mr. PEACOCK. [continuing] we make sure any of the information we provide goes through a rather rigorous, as Henry would say, a quality assurance and quality control process.

Ms. CAPPS. Okay. Now, I guess one final question, and this isn't your job, but we need to find out how the public knows how to do this, how they, and all of us have to, even though we are just in the background, we have to take responsibility that these affects people's lives.

Mr. PEACOCK. Right.

Ms. CAPPS. And so, how is it getting to the public?

Mr. PEACOCK. Well, I can only speak for the Federal level—and Emily, if you can show just the EPA advisories—I mean, these are a list of advisories, announcements, EPA has done, often in coordination with CDC, and once again, we tend to use radio, we tend to use flyers, we have gone door to door. Of course, we have a website, but a lot of people don't have access to it.

Ms. CAPPS. And you are doing that part——

Mr. PEACOCK. We do have a crosslink, for instance, to CDC. All of these advisories, for instance, are on our website, and we have provided the information through, once again, press announcements and radio.

Ms. CAPPS. So you are telling citizens what to do.

Mr. PEACOCK. Yes, that is exactly right.

Ms. CAPPS. But you just said you don't.

Mr. PEACOCK. No, we are telling people, for instance, if someone is going to go into their home, we provide caution, in terms of what they should look out for in their home. But in terms of defining whether or not it is safe to go into a particular house or neighborhood, we are not going to be doing that.

Ms. CAPPS. Boy. Somebody is going to have to do that.

Mr. PEACOCK. Well, the only person who can lift an evacuation is the person who has the power to put it in place, and that is the mayor, and perhaps the Governor. I know less about the State authorities.

Mr. GILLMOR. The gentleman from Pennsylvania.

Mr. MURPHY. Thank you, Mr. Chairman, and I would like to thank the panel for being here on this important issue.

I want to do a little follow-up on the question the gentlelady from California was just asking. And that has to do with, when someone is returning to their home, what would be the checklist that you advise people to be aware of, what they—let us say, just want to go there to get some belongings, at least. What checklist do you want them to keep in mind as they are approaching that, whoever would—Dr. Falk?

Mr. FALK. Let me start by saying that I think for all of us, in addition to headquarters people that are involved, we have a number of staff who are in New Orleans, who are in the State of Louisiana, who are trying to work closely with the Louisiana public health officials and with the New Orleans public health officials in those areas.

So as they approach this on an area-by-area, neighborhood-by-neighborhood, or zip-code approach, specific guidance is developed for people going in, and I think that the staff that we have in the field are trying to work closely with the local officials in preparing

that. So there is guidance that is given out to people as they come back to those areas.

Mr. MURPHY. That is not something that you would necessarily recommend, but let the locals give that guidance onsite?

Mr. FALK. Well, I think we are trying hard to make sure that the local people will give that guidance on the site, but we are trying to work with them, and provide the——

Mr. PEACOCK. Yes. The mayor's plan for reoccupation, which was issued, I think, late yesterday, includes a long list, it is really, you can look at it, it is a checklist of things for citizens to be careful of. Make sure they bring water, for instance, things like that, and that was informed by information provided by the Federal partners and the state.

Mr. MURPHY. Well, then let me step back, and then, say, from your standpoint, so you are not—let us take it from a broader perspective. With all that standing water in the region with chemicals in it, what chemicals are we seeing there? Is there any evidence of problems with exposure to that?

Mr. PEACOCK. The main problem, particularly with the standing floodwaters, is the bacterial contamination, E. coli and coliforms, which are indicative of what you would find in raw sewage. It is a serious problem, and people should avoid the water if they can. There have been, in particular places, and once again, these are the floodwater sampling sites, where there have been elevated levels of chemicals, and in some, I think we have detected, of the over 100 chemicals, 47. In a number of cases, lead, for instance, and arsenic, both have exceeded drinking water assessment levels. Now, those levels are set for someone who is drinking a fair amount of water every day, and so, definitely nobody should be drinking the floodwater. What the long-term effects of those chemicals are is more of a question mark, but the main point is no one should be in contact with the floodwater, particularly because of the possibility of bacterial infection. Would you agree with that, Dr. Falk?

Mr. FALK. Yes, and in addition, I think, for example, in New Orleans, the health department itself has been severely impacted by this whole disaster, and there is a lot of support coming from CDC, Health and Human Services, EPA, and——

Mr. MURPHY. Do we have sufficient support to monitor? No?

Mr. FALK. Sufficient support on the field, and to help assist in various ways. So there are occupational safety and health experts, say, from NIOSH and CDC, who are helping prepare guidance for workers and emergency responders there.

Mr. MURPHY. Are you also looking for particular groups who may be at risk, pregnant mother, the elderly, people with certain disease entities?

Mr. FALK. Yes, and I think in the first wave, we are, you know, the mayor's guidance has been children and elderly are probably not appropriate for the first people who are going in, and so, I think that is probably very critical. You know, in a sense, if there is guidance, for example, that we don't have potable water, people can't use the water in their tap for drinking. They have to use bottled water, boiled water, and so on, you can't expect small children, maybe elderly, who might be confused, to follow. So I think you have to tailor these recommendations, and I think we have all been

trying to work with the local officials in developing that kind of guidance.

Mr. MURPHY. Let me ask one other area, and that is, as people go back to their homes, and even though there are standing floodwaters, but as those subside, mold in the houses. What sort of risks do we see with that?

Mr. FALK. Well, mold is a very critical area, particularly in New Orleans, but I am sure in many other areas along the Gulf Coast. Homes that have had standing water for some period of time, there is extensive amounts of mold, and far greater than we have probably seen in most any other situation. So, I think the guidance, you know, for dealing with mold is very critical, in terms of protection of skin surfaces, in terms of respiratory protection. We just yesterday did a teleconference, you know, for guidance on that. We have been working very much with the local officials on assuring available information for people as they enter the city on the appropriate ways to work with mold, and when it is not appropriate to do it, and if they are exposed to the mold, how they should do it, and the kind of respiratory protection they should have.

So, I think that is really very critical. And we are also very concerned that people who have preexisting respiratory disease or asthma not be the persons doing the primary work on mold. There are people who will certainly be more sensitive to the mold, that really need extra precautions. So, we try to convey that kind of information, how to approach those areas, who should and who should not, what kind of protection, gloves, skin covering, and respiratory protection for people who do do this, and for homeowners who are going back and then, particularly, for emergency responders or construction workers on the occupationsite, who may be doing far more extensive work with the mold. So that is a very critical point for us, in terms of developing guidance, that we are doing together with the local officials.

Mr. MURPHY. Thank you, Doctor, and thank you, Mr. Chairman.

Mr. GILLMOR. Thank you, and that will conclude our first panel, and once again, I want to express my appreciation to all of you for your help. Thank you.

We will now proceed to our second panel, and to begin that, I will be turning the Chair over to the gentleman from New Hampshire, Mr. Bass, and we will get underway.

Mr. BASS [presiding]. Good afternoon. We are pleased to have the second panel here, and the following individuals are going to be testifying before the committee.

Ms. Karen Gautreaux, who is up on the video in front of us here, Deputy Secretary of the Louisiana Department of Environmental Quality in Baton Rouge. To her left on the screen, but obviously not physically, Mr. William Rutledge, who is the mayor of the city of Pontotoc. Is that correct? On behalf of the National Rural Water Association, Dr. Stephen Ragone, Director of Science and Technology, accompanied by Dr. John H. Schnieders, Member of the National Ground Water Association. Mr. Erik Olson, in the center here, Senior Attorney of the Natural Resources Defense Council. Ms. Beverly Wright, Executive Director of Xavier University of Louisiana, and Mr. Robert R. M. Verchick, Gauthier-St. Martin Eminent Scholar, Chair in Environmental Law, Loyola University

New Orleans. Is that you in the screen, sir? The screen on the left, are you Mr. Rutledge? Okay. Good enough. Thank you.

Mr. RUTLEDGE. Yes, sir. Right here.

Mr. BASS. I saw the Tulane sign behind you. I want to advise members that we are expecting votes around 3:45 this afternoon, so we will proceed as quickly as possible with our testimony. I hope that you will confine your remarks to 5 minutes, and submit your record, which we will accept by unanimous consent, your full testimony for the record.

We will begin with Karen Gautreaux. Would you please proceed?

STATEMENTS OF KAREN K. GAUTREAUX, DEPUTY SECRETARY, LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY; WILLIAM RUTLEDGE, MAYOR, CITY OF PONTOTOC, ON BEHALF OF NATIONAL RURAL WATER ASSOCIATION; STEPHEN E. RAGONE, DIRECTOR OF SCIENCE AND TECHNOLOGY, ACCOMPANIED BY JOHN H. SCHNIEDERS, MEMBER, NATIONAL GROUND WATER ASSOCIATION; ERIK D. OLSON, SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL; BEVERLY WRIGHT, EXECUTIVE DIRECTOR, XAVIER UNIVERSITY OF LOUISIANA, DEEP SOUTH CENTER FOR ENVIRONMENTAL JUSTICE; AND ROBERT R.M. VERCHICK, GAUTHIER-ST. MARTIN EMINENT SCHOLAR, CHAIR IN ENVIRONMENTAL LAW, LOYOLA UNIVERSITY, NEW ORLEANS

Ms. GAUTREAUX. Thank you, Mr. Bass, and good afternoon, Mr. Chairman and ladies and gentlemen of the subcommittee. I am Karen Gautreaux, Deputy Secretary of the Louisiana Department of Environmental Quality, and I want to thank you all very much for allowing us to participate in this hearing, and especially for allowing us to do so by teleconference.

Exactly 1 month ago today, Hurricane Katrina made landfall in Buras, Louisiana, and forever changed the physical, cultural, and economic landscape of our state, as well as delivering severe blows to our neighbors to the east in Mississippi, Alabama, and Florida. Last Sunday, Hurricane Rita made landfall in the western side of the State in Cameron Parish, severely impacting that portion of our coast, as well as areas that had previously escaped the wrath of Katrina. Our neighbors in Texas who had been kind enough to send 24 members of a strike team to assist us had to return home and continue their response efforts in their own state. No part of the Gulf Coast has remained untouched this hurricane season.

Today, I will limit my remarks to our Hurricane Katrina assessment and response efforts to date, as this is the focus of your hearing. First, I would like to share with you an observation about Hurricane Katrina that has been repeated by experienced emergency responders from our staff and those of other State and Federal agency partners. Simply, they have seen nothing like it. The magnitude and diversity of the environmental challenges presented by this storm have not been seen before in the United States. I will attempt to give a brief overview of those challenges, how they are being addressed, and actions anticipated in the future.

One of the first things our department and our agency partners did in order to best position themselves to assess and respond to storm impacts was to establish and house a Unified Command

Center at LDEQ headquarters in Baton Rouge. This center includes representatives from our staff, a large contingency from the U.S. EPA, the Army Corps of Engineers, the Coast Guard, U.S. Geological Survey, NOAA, the Texas Commission on Environmental Quality, the Louisiana Oil Spill Coordinators Office, and the Louisiana Department of Health and Hospitals. Local government has also been involved. These representatives are coordinating emergency response, hazard assessment, and environmental sampling and planning activities. We better recognize the value of that coordination in the degree of readiness that we have experienced in response to Hurricane Rita.

One of the key differences between the aftermath of Katrina and other hurricanes was the continued presence of floodwaters in the storm-impacted area. Because much of the area in New Orleans is below sea level, water that falls or enters the city must evaporate or be pumped out. As a result of the breaches and overtopping of the flood protection systems, namely floodwalls and levees, approximately 80 percent of the New Orleans area and some of Jefferson Parish remained flooded until the failed parts of the flood protection system could be patched and those areas pumped out. This led to the floodwater bowl that you may have heard referred to in the lowest elevations of the city, where water sat for weeks. Hurricane Rita re-flooded the areas that had most recently been dewatered. In St. Bernard and Plaquemines Parishes, low-lying areas also suffered from overtopping and breaches of the levee system, leaving them basically at sea level and subject to the tides until the levees could be repaired and the dewatered, now for the second time.

The areas north of Lake Pontchartrain experienced high winds and flooding, and although the damage was significant, in general, those areas are recovering more quickly than Southeast Louisiana.

I will briefly go through a few of the results of the first month's assessment and response activities—again this is the first month—and mention issues that are being addressed, and those that will continue to be priorities for the future.

First, the waters in the bowl in Orleans and Jefferson Parishes: this water flooded homes, businesses, streets, wastewater treatment facilities, and drinking water systems. Initially DEQ and many of our agency partners, especially EPA, focused on search and rescue. As people were trapped by the floodwaters, and search and rescue efforts were hampered by access, dewatering the area was an urgent public health and safety priority. The decision was made to pump the floodwaters to Lake Pontchartrain. EPA and DEQ coordinated sampling efforts, excuse me, to characterize the floodwaters, and measure the potential short- and long-term environmental impacts to the lake. EPA sampled the floodwaters, and as DEQ had a good deal of historical water-quality information on Lake Pontchartrain, we took responsibility for sampling in the lake and in two canals that are sites in the State's ambient water quality program. USGS is currently sampling for bacteria in the lake, and all the results are being shared by the agencies and are available on the Internet.

To date, the sampling has revealed that the floodwaters had characteristics common to most urban storm water events, with contaminants of concern being high levels of fecal coliform bacteria

and levels of lead that would be a health concern if a child were to ingest a liter of the floodwater a day for 6 years every day. These results are not surprising in an area with a flooded wastewater treatment system, submerged vehicles with lead batteries, and older flooded structures with lead paint. I would like to mention that Lake Pontchartrain is not a drinking water source for any community; it is a salty upstream lake.

Early results of the lake sampling indicate common water quality impacts caused by vegetative debris thrown into the water by hurricane winds and storm surge. This has caused low dissolved oxygen and fish killed in Northshore streams feeding into Lake Pontchartrain. Fecal coliform bacteria counts are slightly elevated in some of these areas as a result of flooded sewage treatment facilities, flooding of urban sewage lines, and flooding of pastures.

Organic compound sampling and analysis has shown mostly nondetect results. Where detected, concentrations have not exceeded water quality standards. Metals have been below water quality standards, with the exception of one sample taken from a New Orleans drainage canal. In general, Lake Pontchartrain is maintaining good water quality, and the impacts to the lake have been minimal. We are hopeful that the lake will be back to normal within months, not years, but we will be monitoring for years to come to ensure that is the case. More detail has been provided here to particularly address the concern about the so-called toxic soup being dumped into the lake. The floodwaters were unhealthy, but to date, results show this to be an inaccurate and alarmist characterization.

Initial sediment samples in the flooded areas indicate that there are no acute health issues that would be expected from the concentration of compounds to date. A summary of the sediment sampling results is included for the record, and sample results are available on the EPA website.

The results of 23 air toxic and particulate canister samples in the storm-impacted area have also been encouraging. One sample taken near a fire in New Orleans contained 56 parts per billion benzene, the ATSDR minimum risk level is 50. Three canisters in St. Bernard Parish showed slightly elevated levels of benzene and some other related pollutants, but none exceeded the ATSDR/MRL screening levels in the hydrocarbon profile resembled gasoline and diesel. The sample was taken in an area impacted by a spill. A summary of the air sampling results is also attached to your record.

Of great concern are the impacts of a number of oil spills resulting from Katrina. Currently, five major and five minor oil spills are the subject of response efforts. It is estimated that over 6.5 million gallons of oil have been released into the environment, with more spills expected as pipelines and facilities resume operations. Over 2.5 million gallons of oil have been recovered as of September 28, with the Coast Guard and LOSCO being the lead agencies in that effort.

One major priority is the reestablishment of the large wastewater treatment plants. Out of the 25 in this area, five are now inoperable. The Orleans Eastbank System, alone, was capable of treating 144 million gallons of wastewater per day, so this is a

huge loss in capacity. Four other major facilities that are currently inoperable are located in St. Tammany, St. Bernard, and Plaquemines Parishes. One of the big challenges of restoring these facilities is rebuilding the infrastructure associated with them, including miles of conveyances and numerous lift stations.

Mr. BASS. Ms. Gautreaux.

Ms. GAUTREAUX. The health risks associated with untreated water and wastewater——

Mr. BASS. If you could summarize, that would be great.

Ms. GAUTREAUX. Okay. Well, let me just go into——

Mr. BASS. Sorry.

Ms. GAUTREAUX. [continuing] our current remaining challenges. I will summarize. I apologize. But one of our big remaining challenges are railcars. We have between 1,000 and 5,000 railcars that were displaced or we are unable to locate, because of the storm. We ended up issuing administrative orders and are planning to review that process, so that we are more prepared to act in the event of another incident like this.

There are about 1,000 potentially impacted underground storage tanks in the area, that will probably cost between $39 million and $97 million to repair and remediate.

And finally, the last challenge, but definitely not least is the management of tons of debris, especially with the social, legal, and personal issues associated with the management of debris that have been referenced so far. To just to give you an idea of the volume, normally, the Orleans Parish Landfill disposes of about 1 million tons per year. In that parish alone, the estimate is 12 million tons due to the storm.

We are working with local governments and our Federal partners to try to get a debris management plan, and exercise it, that matches the challenge. I wanted to particularly thank EPA for the ability to prioritize our response efforts, such as oversight, the ASPECT plane equipment that allowed us to pick up hydrocarbons that are invisible to the naked eye, and it helped us prioritize our response. So in general, we certainly are still looking. We are now moving into the serious assessment and response beyond the immediate storm phase, and we are very grateful to our partners, and we look forward to working with you and your committee, and I just guess one of the last things that I would like to suggest to the committee is that the coastal ecosystem that protects many of the issue areas over which your subcommittee has jurisdiction, has been severely damaged, and I hope that Congress will commit to the rehabilitation of this fragile system soon.

And with that, I will apologize for running over, perhaps, and ask that my comments be put into the record, and I will be available for questions.

[The prepared statement of Karen K. Gautreaux follows:]

PREPARED STATEMENT OF KAREN K. GAUTREAUX, DEPUTY SECRETARY, LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Good afternoon, Mr. Chair and Ladies and Gentlemen of the Committee. I'm Karen Gautreaux, Deputy Secretary of the Louisiana Department of Environmental Quality. Thank you very much for allowing us to participate in this hearing, and especially for allowing us to do so by teleconference.

Exactly one month ago today, Hurricane Katrina made landfall in Buras, Louisiana, and forever changed the physical, cultural, and economic landscape of our state, as well as delivering severe blows to our neighbors to the East in Mississippi, Alabama and Florida. Last Sunday, Hurricane Rita made landfall in the western side of the state in Cameron Parish, severely impacting that portion of our coast, as well as areas that had previously escaped the wrath of Katrina. Our neighbors in Texas who had sent 24 members of a "strike team" to assist us, had to return home and continue their response efforts in their own state. No part of the Gulf coast has remained untouched this hurricane season.

Today I will limit my remarks to our Hurricane Katrina assessment and response efforts to date, as this is the focus of your hearing.

First, I'd like to share with you an observation about Hurricane Katrina that has been repeated by experienced emergency responders from our staff and those of other state and federal agency partners. Simply, "they have seen nothing like it." The magnitude and diversity of the environmental challenges presented by this storm have not been seen before in the United States. I will attempt to give a brief overview of those challenges, how they are being addressed, and actions anticipated in the future.

One of first things our department and our agency partners did in order to best position ourselves to assess and respond to storm impacts was to establish and house a Unified Command Center at LDEQ headquarters in Baton Rouge. The center includes representatives from LDEQ, the U.S. Environmental Protection Agency, (EPA), the U.S. Army Corps of Engineers (Corps), the U.S. Coast Guard (Coast Guard), the U.S. Geological Survey (USGS), the National Oceanic and Atmospheric Agency (NOAA), the Texas Commission on Environmental Quality (TCEQ), the Louisiana Oil Spill Coordinators Office (LOSCO), and the Louisiana Department of Health and Hospitals (LDHH). Local government has also been present at the Center. These representatives are coordinating emergency response, hazard assessment, and environmental sampling and planning activities. We better recognize the value of that coordination in the degree of readiness that we have experienced in response to Hurricane Rita.

One of the key differences between the aftermath of Katrina and other hurricanes was the continued presence of floodwaters in the storm impact area. Because much of the area in New Orleans is below sea level, water that falls or enters the city must evaporate or be pumped out. As a result of the breaches and overtopping of the flood protection systems, namely floodwalls and levees, approximately 80 percent of the New Orleans area and some of Jefferson Parish remained flooded until the failed parts of the flood protection system could be patched and those areas pumped out. This lead to the floodwater "bowl" in the lowest elevations of the city where water sat for weeks. Hurricane Rita re-flooded areas that had most recently been dewatered. In St. Bernard and Plaquemines Parishes, low-lying areas also suffered from overtopping and breaches of the levee system, leaving them basically at sea level and subject to the tides until the levees could be repaired and the area dewatered, now for the second time.

The areas north of Lake Pontchartrain experienced high winds and flooding. Although the damage was significant, in general those areas are recovering more quickly than Southeast Louisiana.

I'll briefly go through a few the results of the first month's assessment and response activities, and mention issues that are being addressed, and those that will continue to be priorities for the future.

First, the waters in the "bowl" in Orleans and Jefferson Parishes. This water flooded homes, businesses, streets, wastewater treatment facilities, drinking water systems. Initially DEQ and many of our agency partners, including EPA, focused on search and rescue. As people were trapped by the floodwaters and search and rescue efforts were hampered by access, dewatering the area was an urgent public health and safety priority. The decision was made to pump the floodwaters to Lake Pontchartrain. EPA and DEQ coordinated sampling efforts to characterize the floodwaters and measure the potential short and long-term environmental impacts to the lake. EPA sampled the floodwaters, and as DEQ had a good deal of historical water quality information on Lake Pontchartrain, we took responsibility for sampling in the lake and in two canals that are sites in the state's ambient water quality monitoring network. USGS is currently sampling for bacteria in the Lake. All results are being shared by the agencies and are available on the internet.

To date the sampling has revealed that the floodwaters had characteristics common to most urban storm water events, with the contaminants of concern being high levels of fecal coliform bacteria and levels of lead that would be a health concern if a child were to ingest a liter of the floodwater a day for 6 years. These results

are not surprising in an area with a flooded wastewater treatment system, submerged vehicles with lead batteries, and older flooded structures with lead paint.

Early results of lake sampling indicate common water quality impacts caused by vegetation debris thrown into the water by hurricane winds and storm surge. This has caused low dissolved oxygen and fish kills in Northshore streams feeding into Lake Pontchartrain. Fecal coliform bacteria counts are slightly elevated in some areas as a result of flooded sewage treatment facilities, flooding of urban sewage lines, and flooding of pastures.

Organic compound sampling and analysis has shown mostly non-detect results. Where detected, concentrations have not exceeded water quality standards. Metals have been below water quality standards with the exception of one sample taken from a New Orleans drainage canal. In general Lake Pontchartrain is maintaining good water quality, and the impacts to date to the Lake have been minimal. We are hopeful that the lake will be back to normal within months, not years, but we will be monitoring for years to ensure that is the case. More detail has been provided here to particularly address the concern about the so called "toxic soup" being dumped into the Lake. To date our results show this to be an inaccurate and alarmist characterization.

Initial sediment samples in the flooded areas indicate that there are no acute health issues that would be expected from the concentrations of compounds observed to date. A summary of the sediment sampling results is included for the record, and sample results are available on the EPA web site.

The results of twenty three air toxic and particulate canister samples in the storm impact area have also been encouraging. One sample taken near a fire in New Orleans contained 56 ppb of benzene, the ATSDR MRL is 50. Three canisters in St. Bernard showed slightly elevated levels of benzene and some other related pollutants, but none exceeded the ATSDR MRL screening levels, and the hydrocarbon profile resembled gasoline and diesel. The sample was taken in an area impacted by a spill. A summary of the air sampling results in attached.

Of great concern are the impacts of a number of oil spills resulting from Katrina. Currently 5 major and 5 minor oil spills are the subject of response efforts. It is estimated that over 6.5 million gallons of oil have been released into the environment, with more spills expected as pipelines and facilities resume operations. Over 2.5 million gallons of oil have been recovered as of September 28, with the Coast Guard and LOSCO being the lead agencies in that effort.

One major priority is the reestablishment of drinking water and wastewater treatment systems. Five of the large waste water treatment systems are now inoperable. The Orleans Eastbank system alone was capable of treating 144,000,000 gallons of wastewater per day, so this is a huge loss in capacity. Four other major facilities that are currently inoperable are located in St. Tammany, St. Bernard and Plaquemines Parishes. One of the big challenges of restoring these facilities is rebuilding the infrastructure associated with them, including miles of conveyances and numerous lift stations. The health risks associated with untreated water and wastewater make restoring these services a top priority. The Corps is working with local government, LDEQ and LDHH, and other federal agencies to restore these functions as quickly as possible.

Another remaining challenge is locating, assessing and addressing between one and five thousand railroad cars that could have been displaced by Katrina. LDEQ had difficulty in quickly obtaining sufficient information from railroad companies to determine potential threats to public safety and the appropriate response. As a result, LDEQ issued 17 administrative orders demanding that information. While more information has since been provided to us, the result of delays in getting that information could have been tragic. LDEQ is continuing efforts to locate and assess displaced railcars, as well as considering how to improve this process in the future.

There are about 1000 potentially impacted underground storage tanks (USTs) in the storm affected areas, with potential costs of between $39,000,000 and $97,000,000 to repair and remediate underground storage tanks. Final costs will depend upon the level of damage to sites from the storm, as well as disrupted efforts and additional damage at sites that were being remediated. LDEQ is continuing reconnaissance efforts in the storm impact areas, and has developed a draft UST Evaluation Plan to help UST owners and operators identify and address storm related problems.

Finally, not the last challenge by any means, but probably the most daunting task of all, the management of the tons of debris in the storm impact area. Current estimates of the amount of woody waste and construction and demolition debris are about 22,000,000 tons. To give an appreciation of the volume, the landfill used by Orleans Parish disposed of about 1 million tons in an entire year, and in that parish alone the estimate is 12,000,000 tons. The total does not include approximately

350,000 vehicles from which fuel tanks, oil, batteries and mercury switches must be removed, about 60,000 boats. OF The140,000 to 160,000 homes likely include materials that have to be segregated prior to disposal.

In addition to the sheer logistics challenge, much of this total is or was the personal property of someone who may or may not be with us anymore, or may or may not be able to come back to Louisiana. The property may have been left behind in an evacuation with an intention to return, it might or might not be insured, and perhaps is the property of a person who is now a thousand miles away. There are a myriad of issues to be addressed, and a plan that balances public safety, the environment, and legal and social considerations will have to be the ultimate goal. A FEMA debris management team, of which LDEQ is a partner has developed a debris management plan. LDEQ has responsibility for technical support primarily in evaluating sites that have been identified by local government for debris management. DEQ is also responsible for ensuring that disposal is in accordance with existing regulatory requirements and emergency declaration requirements. Local government will play a large role in the management of debris, particularly with regard to recommending sites and protocols for this effort.

EPA is the lead for the collection of hazardous wastes, both orphaned containers and household materials. Hazardous waste collections have been on-going on the Northshore, and collections will begin soon in the other impacted areas.

With regard to RCRA or hazardous wastes, our initial efforts have been to identify permitted facilities, our large quantity generators, and the Tier II facilities. To date, we've contacted facilities to determine which are operating, in the process of reopening, or shut down, and will determine what future actions need to take place.

One of the benefits of our response efforts has been the use of fairly new technologies that allowed early and effective reconnaissance when access to sites was an issue. Access continues to be an issue in some areas. EPA arranged for overflights with a helicopter equipped with a HAWK camera that can detect hydrocarbons that are invisible to the eye. Leaks that might otherwise go unnoticed can be detected and response prioritized. Similarly, the EPA ASPECT plane could detect compounds from the air, which was especially useful with fires in determining what compounds were being emitted and the appropriate response. EPA also has provided two TAGA vans with house very sophisticated air monitoring instruments. We shared this information with other response agencies, and this information was very valuable in the days immediately following the storm.

It is very difficult to encapsulate the environmental issues associated with Katrina. To help in that regard, I have also provided the committee with a copy of the preliminary estimates of costs for response, assessment and recovery from environmental damages from Katrina. This was an estimate we were asked to provide to our Congressional Delegation within a week or so after the storm. We are currently reviewing those numbers in light of our experience, and would be pleased to forward to the committee a revised version when that work is complete. Besides the numbers, I think one of the values of the document is the systematic identification of issues, that go beyond my time for testimony.

The only other thing I'd like to add that we did not address in our costs estimates document, but are very much concerned about, is the dramatic loss of coastal habitat from the winds and waves of Katrina. We believe that the blow sustained by this fragile ecosystem will likely be among the greatest negative long term impacts to our state and nation, and are hopeful that efforts to rehabilitate this system will commence soon. We realize this is out of the committee's direct jurisdiction, but please be aware that this system provides protection in areas that are directly under your jurisdiction.

With that I'll thank you again for allowing the state of Louisiana to participate in your hearing today, and look forward to your questions and comments.

ATTACHMENT 1

AUGUST 30, 2005 LDEQ DECLARATION OF EMERGENCY AND ADMINISTRATIVE ORDER

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

DECLARATION OF EMERGENCY
AND ADMINISTRATIVE ORDER

Pursuant to the authority granted to me by Louisiana Revised Statutes 30:2001 *et seq.,* and particularly La. R.S. 30:2033 and 2011(D)(6), I hereby make the following findings, declaration and order:

FINDINGS AND DECLARATION

1. On the 29th day of August, 2005, Hurricane Katrina (hereinafter "Hurricane") struck Louisiana, causing widespread damage within the parishes of Ascension, Assumption, East Baton Rouge, East Feliciana, Iberia, Iberville, Jefferson, Lafourche, Livingston, Orleans, Plaquemines, Pointe Coupee, St. Bernard, St. Charles, St. Helena, St. James, St. John, St. Mary, St. Martin, St. Tammany, Tangipahoa, Terrebonne, Washington, West Baton Rouge, and West Feliciana, which parishes shall constitute the specific areas covered by this Declaration and Order. These areas shall herein be referred to as the "Emergency Areas."

2. By State of Louisiana Proclamation No. 48 KBB 2005, the Governor declared on August 26, 2005, that a state of emergency exists in the state of Louisiana, as Hurricane Katrina poses an imminent threat, carrying severe storms, high winds and torrential rain that may cause flooding and damage to private property and public facilities and threaten the safety and security of the citizens of the state of Louisiana.

3. On August 29, 2005, FEMA issued a Disaster Declaration, FEMA-1603-DR covering south Louisiana.

4. I find that the Hurricane has created conditions that require immediate action to prevent irreparable damage to the environment and serious threats to life or safety throughout the Emergency Areas.

WHEREFORE, I hereby declare that an emergency exists, and that the following measures are necessary to prevent irreparable damage to the environment and serious threats to life or safety throughout the Emergency Areas.

ORDER

Within the Emergency Areas:

1. Waste water Treatment Systems

Permittees with Louisiana Pollutant Discharge Elimination System (LPDES) permits should consider activating the upset provisions in their permits. Under upsets caused by this hurricane, the 24 hour oral notification is waived unless the non-compliance may endanger human health. Authorization is hereby granted to discharge water placed in storage tanks, other containers or vessels for the purpose of stabilization, provided that the tanks, containers or vessels had been emptied of their previous contents prior to filling with the water. To the extent practicable, discharges should not contain free oil, hydrocarbons or other pollutants in other than trace amounts. No free oil shall mean that the discharge shall not create a visible sheen. Water that accumulates in storage tanks, containers or vessels as a result of rainfall, flooding or tidal surge may be discharged under the same conditions.

2. Solid Waste Management

a. Owners and operators of solid waste management facilities permitted by the Department before the Hurricane are authorized to make all necessary repairs to restore essential services and the functionality of stormwater management and leachate collection systems damaged by the Hurricane, without prior notice to the Department. Within thirty days of commencing the work of such repair or replacement, however, the permittee shall notify the Department in writing, describing the nature of the work, giving its location, and providing the name, address, and telephone number of the representative of the permittee to contact concerning the work.

b. Uncontaminated Hurricane-generated trees, leaves, vines, twigs, branches, grass, and other vegetative debris may be disposed of in permitted Type II or Type III landfills. Disposal of any solid waste in unpermitted facilities or areas may be authorized by the Department on a case-by-case basis.

c. Construction and demolition debris that is mixed with other Hurricane-generated debris need not be segregated from other solid waste prior to disposal in a permitted landfill.

d. Except as otherwise specifically provided herein, Hurricane-generated debris shall be disposed of in a Type II or III landfill. Non-recyclables and residuals generated from segregation of Hurricane-generated debris shall also be disposed of in a Type II or III landfill.

e. Ash residue from the combustion of yard trash or clean wood wastes may be disposed of in a permitted disposal facility, or may be land spread in any areas approved by local government officials except in wellhead protection areas or water bodies.

f. Ash from the combustion of other Hurricane-generated debris shall be disposed of in a Type II or III landfill or as specified in the Department correspondence dated August 28, 2005 to the Parish Governing Authorities. Metals or other non-combustible materials segregated from the ash residue may also be disposed of in a permitted landfill.

g. White goods (i.e. unsalvageable refrigerators, freezers, air conditioners, stoves, range tops, etc) shall be stored in an area separate from other solid wastes and shall be stored in a manner that prevents vector and odor problems and shall be removed from the facility within 90 days.

h. Putrescible waste (e.g. rotting food that has been removed unsalvageable refrigerators and freezers) shall be disposed of in a Type II landfill

i. The disposal of excessive accumulations of small animal carcasses shall be in accordance with the Louisiana Department of Health and Hospitals sanitary code. The disposal of large animal carcasses (e.g. horses, cows) shall be in accordance with the instructions from the Louisiana Department of Agriculture.

j. Permitted landfills, transfer stations, pickup stations or authorized staging areas (i.e. per Department correspondence dated August 28, 2005 to the Parish Governing Authorities) within or outside of the Emergency Area, which accept Hurricane-generated debris in accordance with the terms of this Order may accept Hurricane-generated debris for disposal or storage without the need to first modify existing permits or certifications. Operators of landfills shall seek modifications of their existing permits to address any long-term impacts of accepting Hurricane-generated debris on operations and closure that are not addressed in existing permits. Long-term impacts are those that will extend past the expiration date of this Order. The requests for modification shall be submitted as soon as possible, but no later than the expiration date of this Order. No permit fee will be required for any modifications necessitated solely by the Hurricane clean-up activities.

k. Authorizations may be issued prior to or following a site inspection by Department personnel for staging areas to be used for temporary storage and chipping, grinding or burning of Hurricane-generated debris. Authorizations may be requested by providing a notice to the Department containing a description of the staging area design and operation, the location of the staging area, and the name, address, and telephone number of the site manager as described in Department correspondence dated August 28, 2005 to the Parish Governing Authorities.

l. Hazardous waste generated as a result of the hurricane event must be separated from other hurricane generated waste and disposed of at a permitted commercial hazardous waste disposal facility. Household wastes are classified as solid wastes that are not hazardous wastes, it is imperative that the household waste collected during this event be managed not only in an environmentally sound manner but also in accordance with the appropriate LDEQ rules and regulations governing the storage and processing of this type of waste.

3. Open Burning

The Department authorizes local governments or their agents to conduct the open burning of Hurricane-generated trees, leaves, vines, twigs, branches, grass, and other vegetative debris within or outside of the Emergency Area, without prior notice to the Department and provided that the provisions of LAC 33:III.1109.D.6. are met. This order does not authorize any other outdoor burning of non-listed debris streams. Within seven days of commencing any such burning, the local government or its agent shall notify the Department in writing, describing the general nature of the materials burned, stating the location and method of burning, and providing the name, address, and telephone number of the representative of the local government to contact concerning the work and the anticipated duration of the burning event. This order does not relieve the local government or the agent from any requirement to obtain an open burning authorization from any other governmental entity empowered to grant such authorizations Notwithstanding the provisions of this paragraph, the burning of asbestos-containing materials or hazardous waste is prohibited.

4. Air Pollution Sources Other than Open Burning

The Department authorizes the minor repair of any previously permitted stationary source of air pollution that was damaged by the Hurricane to restore it to its previously permitted condition without prior notice to the Department. Within thirty days of commencing such repairs, however, the permittee shall notify the Department in writing, stating the location and nature of the work and providing the name, address, and telephone number of the representative of the permittee to contact concerning the work. Minor repairs are repairs that would not constitute reconstruction under any definition of 40 CFR part 60, 61 or 63 and that could not affect potential to emit any pollutant. Repairs that would constitute reconstruction under any definition of 40 CFR Part 60, 61 or 63, or repairs that could affect potential to emit any pollutant are not authorized by this Order.

5. Asbestos Clean-up

The Department waives the requirement for prior notification for emergency demolition or emergency cleanup of asbestos-containing material resulting from the Hurricane. Within one business day of commencing such demolition or cleanup, however, the person responsible for such work shall notify the Department in writing. The notification shall be consistent with the information on the Notice for Asbestos Demolition or Renovation form, AAC-2, and shall include the location and nature of the work and the name, address, and telephone number of the operator on the project. The procedures in LAC 33:III.5151 and LAC 33:III.Chapter 27 for handling asbestos-containing material shall be complied with during demolition and cleanup. Asbestos-containing material shall be disposed of in a Type I or II landfill in accordance with LAC 33:VII of the Louisiana Administrative Code. Burning of asbestos containing material is prohibited.

6. General Conditions

a. This Emergency Final Order does not convey any property rights or any rights or privileges other than those specified in this Order.

b. This Emergency Final Order only serves as relief for the duration of the Order from the regulatory and proprietary requirements of the Department, and does not provide relief from the requirements of other federal, state, water management districts, and local agencies. This Order therefore does not negate the need for the property owner to obtain any other required permits or authorizations, nor from the need to comply with all the requirements of those agencies.

7. General Limitations

The Department issues this Emergency Final Order solely to address the emergency created by the Hurricane. This Order shall not be construed to authorize any activity within the jurisdiction of the Department except in accordance with the express terms of this Order. Under no circumstances shall anything contained in this Order be construed to authorize the repair, replacement, or reconstruction of any type of unauthorized or illegal structure, habitable or otherwise.

8. Other Authorizations Required

Nothing in this Order shall eliminate the necessity for obtaining any other federal, state, water management district, or local permits or other authorizations that may be required.

9. Extension of time to comply with specified deadlines

For facilities regulated by the Department in the Emergency Area, this Order extends the time for a period of 30 days to comply with the following specified deadlines that occur between August 28,2005 and the expiration of this order:

a. The time deadlines to conduct or report periodic monitoring required by permits, other authorizations, enforcement actions, or settlement agreements, except for monitoring required by air permits issued under Title IV or V of the Clean Air Act or under the PSD program;

b. The time deadlines to file an application for renewal of an existing permit, except for air permits issued under Title V of the Clean Air Act.

10. Completion of Authorized Activities

a. All activities authorized under this Emergency Final Order must be commenced before the expiration of this Order unless otherwise provided in an authorization or permit. The deadline for commencement under any authorization or permit issued under this order may be extended on a showing that contractors or supplies are not available to commence the work, or if additional time is needed to obtain any required authorization from the U.S. Army Corps of Engineers.

b. A blanket approval of time extensions under Louisiana Administrative Code 33:V.1109.E.2 is necessary within the Emergency Areas for hazardous waste generators and small quantity generators for the storage of their hazardous wastes on site, pending the cleanup of the Hurricane damage and restoration of essential services. The rules authorize a thirty-day extension

because of unforeseen and uncontrollable circumstances. The specific effects of the Hurricane were unforeseen and uncontrollable. Therefore, to avoid having to issue a potentially large number of individual approvals on a case-by-case basis and waste limited agency resources during the time of emergency, the Department authorizes a general extension of time of thirty days from the expiration of this Order for all such hazardous waste generators and small quantity generators for the storage of their hazardous wastes on site, in the parishes within the Emergency Areas, and where their 90 day accumulation period expires within the term of this Order.

11. Amendments

This Order may be amended as required to abate the emergency.

12. Expiration Date

This Emergency Final Order shall take effect immediately upon execution by the Secretary of the Department, and shall expire in 60 days from the date of execution set forth below, unless modified or extended by further order.

DONE AND ORDERED on this 30th day of August, 2005, in Baton Rouge, Louisiana.

_____

Mike D. McDaniel, Ph.D. Secretary

ATTACHMENT 2

SEPTEMBER 3, 2005 AMENDED LDEQ DECLARATION OF EMERGENCY AND ADMINISTRATIVE ORDER

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

AMENDED DECLARATION OF EMERGENCY AND ADMINISTRATIVE ORDER

Pursuant to the authority granted to me by Louisiana Revised Statutes 30:2001 *et seq.,* and particularly La. R.S. 30:2033 and 2011(D)(6), I hereby make the following findings, declaration and order, which supercede the Declaration of Emergency and Administrative Order issued by this agency on August 30, 2005 :

FINDINGS AND DECLARATION

1. On the 29th day of August, 2005, Hurricane Katrina (hereinafter "Hurricane") struck Louisiana, causing widespread damage within the parishes of Ascension, Assumption, East Baton Rouge, East Feliciana, Iberia, Iberville, Jefferson, Lafourche, Livingston, Orleans, Plaquemines, Pointe Coupee, St. Bernard, St. Charles, St. Helena, St. James, St. John, St. Mary, St. Martin, St. Tammany, Tangipahoa, Terrebonne, Washington, West Baton Rouge, and West Feliciana, which parishes shall constitute the specific areas covered by this Declaration and Order. These areas shall herein be referred to as the "Emergency Areas."

2. By State of Louisiana Proclamation No. 48 KBB 2005, the Governor declared on August 26, 2005, that a state of emergency exists in the state of Louisiana, as Hurricane Katrina poses an imminent threat, carrying severe storms, high winds and torrential rain that may cause flooding and damage to private property and public facilities and threaten the safety and security of the citizens of the state of Louisiana.

3. On August 29, 2005, FEMA issued a Disaster Declaration, FEMA-1603-DR covering south Louisiana.

4. I find that the Hurricane has created conditions that require immediate action to prevent irreparable damage to the environment and serious threats to life or safety throughout the Emergency Areas.

WHEREFORE, I hereby declare that an emergency exists, and that the following measures are necessary to prevent irreparable damage to the environment and serious threats to life or safety throughout the Emergency Areas.

ORDER

Within the Emergency Areas:

1. Waste water Treatment Systems

a. Permittees with Louisiana Pollutant Discharge Elimination System (LPDES) permits should consider activating the upset provisions in their permits. LAC 33:IX.2701.N.1 defines Upset as the following:

> *An exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.*

An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of LAC 33:IX.2701.N.3 are met. Under upsets caused by this hurricane, the 24 hour oral notification is waived unless the non-compliance may endanger human health. Authorization is hereby granted to discharge water placed in storage tanks, other containers or vessels for the purpose of stabilization, provided that the tanks, containers or vessels had been emptied of their previous contents prior to filling with the water. To the extent practicable, discharges should not contain free oil, hydrocarbons or other pollutants in other than trace amounts. No free oil shall mean that the discharge shall not create a visible sheen. Water that accumulates in storage tanks, containers or vessels as a result of rainfall, flooding or tidal surge may be discharged under the same conditions.

Appendix A sets forth guidance to operators of sanitary waste water treatment systems to aid in the return to compliant operations to prevent further damage to the environment and serious threats to life or safety throughout the Emergency Areas.

2. Solid Waste Management

a. Owners and operators of solid waste management facilities permitted by the Department before the Hurricane are authorized to make all necessary repairs to restore essential

services and the functionality of stormwater management and leachate collection systems damaged by the Hurricane, without prior notice to the Department. Within thirty days of commencing the work of such repair or replacement, however, the permittee shall notify the Department in writing, describing the nature of the work, giving its location, and providing the name, address, and telephone number of the representative of the permittee to contact concerning the work.

b. Uncontaminated Hurricane-generated trees, leaves, vines, twigs, branches, grass, and other vegetative debris may be disposed of in permitted Type II or Type III landfills. Disposal of any solid waste in unpermitted facilities or areas may be authorized by the Department on a case-by-case basis.

c. Construction and demolition debris that is mixed with other Hurricane-generated debris need not be segregated from other solid waste prior to disposal in a permitted landfill.

d. Except as otherwise specifically provided herein, Hurricane-generated debris shall be disposed of in a Type II or III landfill. Non-recyclables and residuals generated from segregation of Hurricane-generated debris shall also be disposed of in a Type II or III landfill.

e. Ash residue from the combustion of yard trash or clean wood wastes may be disposed of in a permitted disposal facility, or may be land spread in any areas approved by local government officials except in wellhead protection areas or water bodies.

f. Ash from the combustion of other Hurricane-generated debris shall be disposed of in a Type II or III landfill or as otherwise specifically authorized by the Department. Metals or other non-combustible materials segregated from the ash residue may also be disposed of in a permitted landfill.

g. White goods (i.e. unsalvageable refrigerators, freezers, air conditioners, stoves, range tops, etc) shall be stored in an area separate from other solid wastes and shall be stored in a manner that prevents vector and odor problems and shall be removed from the facility within 90 days.

h. Putrescible waste (e.g. rotting food that has been removed from unsalvageable refrigerators and freezers) shall be disposed of in a Type II landfill.

i. The disposal of excessive accumulations of small animal carcasses shall be in accordance with the Louisiana Department of Health and Hospitals sanitary code. The disposal of large animal carcasses (e.g. horses, cows) shall be in accordance with the instructions from the Louisiana Department of Agriculture.

j. Permitted landfills, transfer stations, pickup stations and authorized staging areas that have been authorized by the Department, within or outside of the Emergency Area, which accept Hurricane-generated debris in accordance with the terms of this Order may accept Hurricane-generated debris for disposal or storage without the need to first modify existing permits or certifications. Operators of landfills shall seek modifications of their existing permits to address any long-term impacts of accepting Hurricane-generated debris on operations and

closure that are not addressed in existing permits. Long-term impacts are those that will extend past the expiration date of this Order. The requests for modification shall be submitted as soon as possible, but no later than the expiration date of this Order. No permit fee will be required for any modifications necessitated solely by the Hurricane clean-up activities.

k. Authorizations may be issued prior to or following a site inspection by Department personnel for staging areas to be used for temporary storage and chipping, grinding or burning of Hurricane-generated debris. Authorizations may be requested by providing a notice to the Department containing a description of the staging area design and operation, the location of the staging area, and the name, address, and telephone number of the site manager as described in Department correspondence dated September 13, 2004 to the Parish Governing Authorities.

3. Hazardous Waste

Hazardous waste generated as a result of the hurricane event must be separated from other hurricane generated waste and disposed of at a permitted hazardous waste disposal facility. Household wastes collected during this event, which are exempt from the regulatory requirements applicable to hazardous wastes, must be managed not only in an environmentally sound manner but also in accordance with the appropriate LDEQ rules and regulations governing the storage and processing of this type of waste.

4. Open Burning

a. The Department authorizes local governments or their agents to conduct the open burning of Hurricane-generated trees, leaves, vines, twigs, branches, grass, and other vegetative debris within or outside of the Emergency Area, without prior notice to the Department and provided that the provisions of LAC 33:III.1109.D.6. are met. This order does not authorize any other outdoor burning of non-listed debris streams. Within seven days of commencing any such burning, the local government or its agent shall notify the Department in writing, describing the general nature of the materials burned, stating the location and method of burning, and providing the name, address, and telephone number of the representative of the local government to contact concerning the work and the anticipated duration of the burning event. This order does not relieve the local government or the agent from any requirement to obtain an open burning authorization from any other governmental entity empowered to grant such authorizations Notwithstanding the provisions of this paragraph, the burning of asbestos-containing materials or hazardous waste is prohibited.

b. The Department will consider, on an individual basis, requests for approval for open burning, by persons other than local governments or their agents, of Hurricane-generated trees, leaves, vines, twigs, branches, grass, and other vegetative debris. Any such burning approved by the Department must be conducted in compliance with the requirements of LAC 33:III.1109.D.6.

5. Air Pollution Sources Other than Open Burning

a. The Department authorizes the minor repair of any previously permitted stationary source of air pollution that was damaged by the Hurricane to restore it to its previously permitted condition without prior notice to the Department. Within thirty days of commencing such repairs, however, the permittee shall notify the Department in writing, stating the location and nature of the work and providing the name, address, and telephone number of the representative of the permittee to contact concerning the work. Minor repairs are repairs that would not constitute reconstruction under any definition of 40 CFR part 60, 61 or 63 and that could not affect potential to emit any pollutant. Repairs that would constitute reconstruction under any definition of 40 CFR Part 60, 61 or 63, or repairs that could affect potential to emit any pollutant are not authorized by this Order.

b. The Department will consider, on an individual basis, requests for approval for the following sources of air pollution:

i. temporary air pollution control devices, such as portable flares, used for vessel and pipeline segment purging and the limited operation of facilities with damaged vapor control equipment;

ii. portable storage tanks, used for interim storage while damaged equipment is being repaired; and

iii. repairs, other than the minor repairs addressed in Section 4.a above, of permitted stationary sources that have been damaged by the hurricane, provided that the sources are restored or replaced with equipment that is identical or the functional equivalent, to meet permit conditions.

c. The throughput of any temporary gasoline storage vessels used exclusively for providing gasoline to employees of the tank operator will not be counted toward the annual or 30-day average throughput for purposes of determining the applicability of control requirements under LAC 33:III.2131. This subparagraph applies only to gasoline provided to employees at or below the operator's cost. This subparagraph does not exempt the operator from any other applicable regulatory requirements, specifically including, but not limited to, the spill prevention and control requirements of the Louisiana Water Quality Regulations (LAC 33:IX).

6. Asbestos Clean-up

a. The Department waives the requirement for prior notification for emergency demolition or emergency cleanup of asbestos-containing material resulting from the Hurricane. Within one business day of commencing such demolition or cleanup, however, the person responsible for such work shall notify the Department in writing. The notification shall be consistent with the information on the Notice for Asbestos Demolition or Renovation form, AAC-2, and shall include the location and nature of the work and the name, address, and telephone number of the operator on the project. The procedures in LAC 33:III.5151 and LAC 33:III.Chapter 27 for handling asbestos-containing material shall be complied with during demolition and cleanup. Asbestos-

containing material shall be disposed of in a Type I or II landfill in accordance with LAC 33:VII of the Louisiana Administrative Code. Burning of asbestos containing material is prohibited.

b. The Department waives the requirement pursuant to LAC 33:III.5151.F.1 that an affected facility be thoroughly inspected for the presences of asbestos. Debris generated by the renovation or demolition in the affected area does not need to be handled in accordance with the requirements of LAC 33:III.5151.F unless it is known to be Regulated Asbestos Containing Material. However, appropriate personal protection equipment (e.g., tyvek suits, appropriate respirators ~~dust masks~~, etc.) are recommended.

c. The department waives the requirement pursuant to LAC 33:III.2799.E.2.b.ii, that applicants receiving training from providers not recognized by the state of Louisiana also submit proof of training in current Louisiana asbestos regulations (see LAC 33:III.2799.F.5.g).

d. The department waives the requirement pursuant to LAC 33:III.2799.F.5.c.i that recognized asbestos Training Providers give the department notice at least five days prior to class commencement (Notification must be made at least three days prior to a course when only the state regulations are to be taught.) Notice shall be provided to the department within 24 hours of class commencement.

e. Local education agencies and state government may make emergency use of a building as a school or state building. The agency making use of the building may request an extension of the deadline to inspect the building within 4 months of the decision to use the building pursuant to LAC 33:III.2707.A.2.

f. The department waives the requirement pursuant to LAC 33:III.2723.A.2 that the local education agency or state government must submit a management plan prior to any building's use as a school or state buildings. A management plan shall be submitted within 6 months of the initial use of the building.

7. General Conditions

a. This Emergency Final Order does not convey any property rights or any rights or privileges other than those specified in this Order.

b. This Emergency Final Order only serves as relief for the duration of the Order from the regulatory and proprietary requirements of the Department, and does not provide relief from the requirements of other federal, state, water management districts, and local agencies. This Order therefore does not negate the need for the property owner to obtain any other required permits or authorizations, nor from the need to comply with all the requirements of those agencies.

8. General Limitations

The Department issues this Emergency Final Order solely to address the emergency created by the Hurricane. This Order shall not be construed to authorize any activity within the

jurisdiction of the Department except in accordance with the express terms of this Order. Under no circumstances shall anything contained in this Order be construed to authorize the repair, replacement, or reconstruction of any type of unauthorized or illegal structure, habitable or otherwise.

9. Other Authorizations Required

Nothing in this Order shall eliminate the necessity for obtaining any other federal, state, or local permits or other authorizations that may be required.

10. Extension of time to comply with specified deadlines

For facilities regulated by the Department in the Emergency Area, this Order extends the time for a period of 30 days to comply with the following specified deadlines that occur between August 28,2005 and the expiration of this order:

a. The time deadlines to conduct or report periodic monitoring required by permits, other authorizations, enforcement actions, or settlement agreements, except for monitoring required by air permits issued under Title IV or V of the Clean Air Act or under the PSD program;

b. The time deadlines to file an application for renewal of an existing permit, except for air permits issued under Title V of the Clean Air Act.

11. Completion of Authorized Activities

a. All activities authorized under this Emergency Final Order must be commenced before the expiration of this Order unless otherwise provided in an authorization or permit. The deadline for commencement under any authorization or permit issued under this order may be extended on a showing that contractors or supplies are not available to commence the work, or if additional time is needed to obtain any required authorization from the Federal Emergency Management Agency, the U.S. Army Corps of Engineers, or other local, state, or federal agencies.

b. A blanket approval of time extensions under Louisiana Administrative Code 33:V.1109.E.2 is necessary within the Emergency Areas for hazardous waste generators and small quantity generators for the storage of their hazardous wastes on site, pending the cleanup of the Hurricane damage and restoration of essential services. The rules authorize a thirty-day extension because of unforeseen and uncontrollable circumstances. The specific effects of the Hurricane were unforeseen and uncontrollable. Therefore, to avoid having to issue a potentially large number of individual approvals on a case-by-case basis and waste limited agency resources during the time of emergency, the Department authorizes a general extension of time of thirty days from the expiration of this Order for all such hazardous waste generators and small quantity generators for the storage of their hazardous wastes on site, in the parishes within the Emergency Areas, and where their 90 day accumulation period expires within the term of this Order.

12. Amendments

This Order may be amended as required to abate the emergency.

13. Expiration Date

This Amended Declaration of Emergency and Administrative Order shall take effect immediately upon execution by the Secretary of the Department, and shall expire in 60 days from the date of execution set forth below, unless modified or extended by further order.

DONE AND ORDERED on this ____ day of _____, 2005, in Baton Rouge, Louisiana.

_____
Mike D. McDaniel, Ph.D. Secretary

APPENDIX A

GUIDANCE PROTOCOL FOR SANITARY WASTE WATER TREATMENT SYSTEMS

The following protocol is intended to assist operators of sanitary waste water treatment systems in the Emergency Area in start up and operation.

1. Access

Entrance to the treatment plant should be considered only after flood waters have receded enough to allow safe operation of the treatment plant including the safe conditions for staff. Accessibility to treatment plants in restricted areas may need to be cleared with the Office of Emergency Preparedness. Contact LDEQ (SPOC 225-219-3640) if assistance in gaining access to the treatment plant is required. The use of sound personal protective equipment for safety in unsanitary or unsafe conditions is required. Early return to compliant operation minimizes long term problems within the entire wastewater system.

2. Power Supply

For use of generator power, arrange for a reliable and continual fuel source. Contact LDEQ (SPOC 225-219-3640) if assistance in obtaining fuel for power generation at your treatment plant is needed. If no generation is available and you must wait for electrical providers; consider notification to residents of the effect on collection lines. If removal of clean out plugs is needed to prevent back up into homes, notify affected customers warning them to remain clear of these areas. If pump trucks are used, LDEQ can advise of locations to dispose of the pumped sewage.

3. Start Up

Once it is safe, re-power the treatment system, aerators and pumps. The primary goal is to remove sanitary wastewater from contact with humans, while making every effort to do so in a manner that is practical and least impacting on the environment. Activate disinfection units and maintain them. Initial effluent will likely be poorly treated and of a very poor quality. Adequate disinfection will be important to protect human health downstream of the discharge. If the system has been down and/or without power for an extended period of time, resident bacteria used in the treatment process may need to be re-established. Consider reseeding the system with activated sludge from operating aerated treatment plants. Several treatment plants are available for use in reseeding. Contact LDEQ for information regarding system seed sources.

4. Monitoring

Watch plant operations carefully to confirm it is functioning properly. Ensure that lift stations within the collection system are functional. Without functioning lift stations, sewage is not being removed from residences and sent for treatment. Visually observe effluent to maximize treatment effectiveness in the short term. If simple tools and/or tests are available to diagnose the plant's operational status ("sludge judge", settle-o-meter, dissolved oxygen meters, BOD analyses) use them frequently. If your plant is discharging poorly treated sewage, consider the impacts to persons, fish and wildlife downstream, including the possibility that drinking water intakes may be located downstream of your effluent. Notification to downstream users may be necessary to protect human health. Sample and analyze your effluent per LPDES requirements as soon as you are able.

5. Notifications and Documentation

Discharges that result in emergency conditions (threat to human health and the environment) must be reported immediately (1-877-925-6595). Discharges that result in

emergency conditions (threat to human health and the environment) may require notification to affected persons. Report to the DEQ any discharges that interfere with downstream uses, such as swimming or drinking water sources or if fish kills occur. Discharge Monitoring Reports (per permit requirements) should be used to notify the DEQ of non-emergency conditions. Notification to sewage users may be necessary if problem with the system prevents removal of sewage from residences (or other human contact) on an on-going basis. Notification to downstream users may be necessary to protect human health. Notify the Local Office of Emergency Preparedness when hurricane damage repairs are known – Federal Emergency Management Agency (FEMA) may be able to help with costs associated with hurricane damage.

A permittee who wishes to establish the affirmative defense of upset must document the cause of the upset, that the facility was being properly operated at the time of the upset, that notice of the upset that exceeded effluent limitations was submitted to the DEQ and that the permittee took all reasonable steps to minimize or prevent the likelihood of adversely affecting human health or the environment.

6. *Records Management*

Hard copy or electronic copies of files associated with environmental issues for your facility may be available at the DEQ. Files destroyed by the hurricane can be obtained by the Responsible Persons for your system from the DEQ free of charge. Please contact Records Management at (225) 219-3172 or online at http://www.deq.louisiana.gov/pubRecords/.

ATTACHMENT 3
EXAMPLE APPROVAL LETTER FOR STAGING AND CHIPPING WOOD WASTE

Mr. Eddie Howard
Ascension Parish Government
42077 Churchpoint Rd.
Gonzales, LA 70737

RE: Emergency Disaster Cleanup Sites
Ascension Parish
AI Number 83547

Dear Mr. Howard:

The Louisiana Department of Environmental Quality has reviewed your request to utilize the following site locations for the staging and chipping of woodwaste generated during Hurricane Katrina:

- 309 Mississippi St., Donaldsonville, owned by the City of Donaldsonville
- 9690 Airline Hwy, Sorrento, owned by the Ascension Parish School Board
- 42077 Churchpoint Rd., Gonzales, owned by Ascension Parish Government

An inspection of these sites was conducted by representatives of the Department. These site locations are now approved for the staging and chipping of woodwaste generated as a result of Hurricane Katrina. This approval will remain in effect until December 31, 2005. Disposal of any waste is **not** permitted at these sites.

If you have any questions contact Ms. Beth Scardina or Mr. Robert Thomas at 225-219-3070.

Sincerely,

Chuck Carr Brown, Ph.D.
Assistant Secretary

bls

c: CRO
Steve Aguillard, OEC-ED

ATTACHMENT 4
EXAMPLE APPROVAL LETTER FOR C&D DISPOSAL SITE

St. Charles Parish Police Jury
P.O. Box 302
Hahnville, LA 70057

RE: Emergency Disaster - Pre-approved Construction and Demolition Debris Disposal Site
Operation and On-Site Closure Approval
AI Number# 83573
Katrina AI# 130534
St. Charles Parish

Dear Sir:

The Louisiana Department of Environmental Quality (hereafter referred to as "Department") hereby approves the temporary disposal of construction and demolition debris (C&D) and the closure of C&D sites resulting from the widespread damage caused by Hurricane Katrina at the location identified below. Operation and closure of the site shall be in accordance with the specifications contained in the Interim Operational Plan. (Attachment 1).

- BFI (west) Landfill, Boutte 29.91567 90.29353
- K.V. Landfill 30.00537 90.51933

This approval will allow for more efficient and expeditious management of the high volumes of storm debris resulting from Hurricane Katrina and will remain in effect until December 31, 2005. However, the Department reserves the right to reduce or extend the timeframe of this temporary approval based upon the progression of the clean-up efforts associated with the aftermath of Hurricane Katrina.

The Department would like to reiterate that the commencement of the operation of at the designated location is contingent upon the approval of the affected property owner.

Only those C&D wastes generated as a result of Hurricane Katrina are to be disposed at this location. It is imperative that the debris collected as a result of this emergency event be managed not only in an environmentally sound manner but also in accordance with the appropriate LDEQ rules and regulations governing the storage, processing and disposal of this type of waste. Operation and closure of the site shall be in accordance with the specifications contained in the Interim Operational Plan. (Attachment 1)

The materials acceptable for disposal at this location consist of the following:

- Nonhazardous waste generally considered not water-soluble, including but not limited to metal, concrete, brick, asphalt, roofing materials (shingles, sheet rock, plaster), or lumber from a construction or demolition project;
- Furniture, carpet, painted or stained lumber contained in the demolished buildings;
- The incidental admixture of construction and demolition debris with asbestos-contaminated waste. (i.e., incidental asbestos-contaminated debris that cannot be extracted from the demolition debris); or
- Yard Trash

The following materials shall not be disposed of in this location's pre-approved construction and demolition debris disposal site, but segregated and transported to an LDEQ approved staging area for eventual management, recycling and/or disposal at a permitted Type II Landfill:

- White goods
- Putrescible Waste

The management of Hurricane Katrina generated debris at permitted and pre-approved C&D locations shall be between the hours of 7:00 am to 7:00 pm Central Standard Time (CST) (unless alternate hours of operation are approved by the Department).

In accordance with Act 1074 of the 1990 Regular Session, the Department will provide written notice to the local governing authority of this authorization that allows the on-site disposal of solid waste.

At least five (5) days prior to the initiation of on-site closure, the Department requires that you provide written notification to:

Louisiana Department of Environmental Quality
Office of Environmental Assessment
P.O. Box 4314
Baton Rouge, La. 70821-4314
Phone:(225)219-3236
FAX: (225)219-3239
Email: deqoea@la.gov

Within thirty (30) days after completion of on-site closure, the Department requires that you submit: (1) a letter certifying that closure was conducted in accordance with the Interim Operational Plan; (2) a copy of the public notice required upon closure of the site, (Attachment 2) and a copy of the required deed recordation certified by the Clerk of Courts Office, (Attachment 3). These documents should be sent to:

Louisiana Department of Environmental Quality
Office of Environmental Compliance
P.O. Box 4312
Baton Rouge, La. 70821-4312
Phone: (225)219-3700
FAX: (225)219-3708
Email: deqoec@la.gov

The Department will notify the local governing authority regarding the final closure of the C&D site.

If you have any questions regarding this matter, please contact Mr. Rob Thomas or Ms. Beth Scardina of the Water and Waste Permits Division at (225) 219-3070.

Sincerely,

Chuck Carr Brown, Ph.D.
Assistant Secretary

c: SERO

ATTACHMENT 5

EXAMPLE INTERIM OPERATIONAL PLAN

AUTHORIZED EMERGENCY SITES FOR DISPOSAL CONSTRUCTION/DEMOLITION DEBRIS, WOODWASTE, YARD TRASH & EXEMPT MATERIALS LANDFILLS

Hurricane Katrina Debris Interim Operational Plan

The operation of the disposal facility governed by this authorization will comply with the following requirements:

1. Provide adequate supervision and security of the site to control disposal of materials, allowing disposal of construction/demolition debris, woodwaste, yard trash and exempt materials as defined by LAC 33:VII.115 and as authorized for the site. Disposal of unauthorized waste is strictly prohibited and must be prevented.

2. Post a sign at the entrance to the facility listing acceptable wastes and prohibited wastes including, but not limited to, liquid waste, volatile waste, hazardous waste, flammable waste, infectious waste, domestic waste, friable asbestos and putrescible waste (garbage).

3. Personnel will maintain a daily inventory documenting each truck load of waste received and each truck load rejected at the gate. Such documentation will include some form of identification of source of generation, transporter, the approximate volume of waste received, and a general description of the waste. Also, a reason for rejecting a load of waste should be documented in the daily log.

4. All records required by this authorization will be maintained on site and available for inspection by representatives of the Department.

5. Wastes shall be dumped under supervision in the smallest practical area, spread and compacted daily. The wastes shall be deposited in such a manner as to allow daily compaction of the waste. The wastes shall be covered with twelve (12") inches of silty clays at least every fourteen (14) days, if possible. Records will be maintained to substantiate compliance with this requirement.

6. Unauthorized waste should be segregated and placed in a container as required by LAC 33:VII.703. The unauthorized waste will be removed at least every seven

(7) days, if possible. Records documenting removal and disposal of unauthorized waste as required here must be maintained for inspection.

7. Access to the facility shall be by all weather roads that can meet the demands of the facility. Roads within the facility shall be maintained as all weather roads or the facility will provide an operational change to implement during wet weather conditions as well as a means of dust control.

8. An annual report must be submitted to the administrative authority indicating quantities and types of solid wastes (expressed in wet-weight tons per year), received from generators, during the reporting period. All calculations used to determine the amounts of solid waste received for disposal during the annual reporting period shall be submitted to the administrative authority. Annual reports shall be submitted to the administrative authority by August 1st of each reporting year.

9. Open burning shall not be practiced unless authorization is first obtained from the administrative authority and any other applicable federal, state and local authorities. Should any fire start, procedures will be initiated immediately to control and to extinguish it.

10. No solid waste shall be deposited in standing water. Before any water is pumped or drained from the site, a water discharge permit must be obtained from the Office of Environmental Services, Water and Waste Permits Division.

11. Unapproved salvaging shall be prohibited and prevented. Scavenging shall be prevented.

12. Litter both within the site and along the entrance to the site shall be controlled by use of litter fences and/or regular policing of the site.

13. Adequate equipment and personnel must be provided to achieve the operational requirements of the facility as stated here and in LAC 33:VII.721. Backup equipment shall be provided in the event of equipment breakdown. Personnel will be adequately trained in the recognition of unauthorized materials, segregation procedures, and emergency procedures.

14. In the event of unauthorized disposal or deposit at the facility the Department must be notified immediately.

15. Final compacting and grading will be completed before capping. Final cover will be completed within 90 days after final grades are reached. The side slope should be no steeper than 4(H):1(V) (for above ground) and must have a minimum of a 4 percent slope on the top of the final cap. The final cover must consist of a minimum of 24 inches of silty clays, or Department approved equivalent and 6 inches of topsoil sufficient for supporting vegetative growth.

16. After closure inspection and approval, ground cover will be planted to prevent erosion and return the facility to a more natural appearance.

17. Parish mortgage and conveyance records will be updated as required by the Louisiana Statutes and state regulations. A certified true copy will be submitted as required.

18. The integrity of the grade and cap must be maintained for no less than three years after the date of administrative authority's approval of the closure of the facility. Annual reports concerning the integrity of the cap will be submitted for a period of three years after closure.

PUBLIC NOTICE

I, _____, of _____, received authorization from the Louisiana Department of Environmental Quality, for the operation and closure of an emergency authorized construction and demolition debris disposal site. The site contains approximately _____tons of _____. It is located in Section _____,Township _____, Range _____, in _____ Parish, Louisiana.

Closure activities commenced on _____ and were completed on _____.

DOCUMENT TO BE FILED IN THE PARISH RECORDS UPON
FINAL CLOSURE OF A SOLID WASTE DISPOSAL FACILITY

_____ (Name of authorized facility owner or permit owner) hereby notifies the public that the following described property was used for the disposal of solid waste. The site was closed on _____ (date) in accordance with the Louisiana Administrative Code, Title 33, Part VII. Inquiries regarding the contents of the facility may be directed to _____(name of person with knowledge of the contents of the facility) at

_____ (address of person with knowledge of the content of the facility).

Property Description:
(Provide the specific description of the location of the facility)

_____
(Signature of Person Filing Parish Record)

_____
(Typed Name & Title of Person Filing
Parish Record)

(A true copy of the document certified by the parish clerk of court must be sent to the Louisiana Department of Environmental Quality, Office of Environmental Compliance, Enforcement Division, Post Office Box 4312, Baton Rouge, Louisiana 70821-4312)

ATTACHMENT 6
EXAMPLE "BURN LETTER"

September15, 2005

Mr. Albert LaQue, President
St. Charles Parish Government
Post Office Box 302
Hahnville, LA 70057

Re: Request for Burning Storm Debris
St. Charles Parish Government
Agency Interest No.9065 N 29.91796
Davis Pond Diversion Canal Site W 90.31891

Dear Mr. LaQue:

The Louisiana Department of Environmental Quality (DEQ) has received your letter dated September 14, 2005, requesting permission on behalf of St. Charles Parish Government to burn storm debris.

According to Louisiana Air Quality Regulations, in particular LAC 33:III.1109.B, outdoor burning is prohibited. No person shall cause or allow the outdoor burning of waste material or other combustible material on any property owned by him or under his control except as provided in LAC 33:III.1109.C and D.

In accordance with LAC 33.III.1109.D.9.c, a one-time exception is hereby granted by the DEQ regarding procedures for burning storm debris. DEQ will allow fires purposely set as a part of an organized program to dispose of storm debris, such as leaves, limbs, trees, and other vegetable matter, if the following conditions are met:

1. If the burning is conducted continually, that it will not create a nuisance or health hazard:

2. Fire-fighting personnel will be advised of the burning events;

3. The debris is at least one thousand (1,000) feet (305 meters) from any inhabited dwelling;

4. The burning is controlled so that the emission of smoke, suspended particle matter, or uncombined water or any air contaminants or

combination thereof, does not cross a public road and create a traffic hazard by impairment of visibility;

5. Care is used to minimize the amount of dirt on the material that is being burned;

6. Heavy oils, asphaltic materials, items containing natural or synthetic rubber, or any materials other than plant growth which produce unreasonable amounts of smoke may not be burned; nor may these substances be used to start a fire;

7. Prevailing winds at the time of the burning must be away from any city, town or airport, the ambient air of which may be affected by smoke from the burning; and

8. This exception applies only to burning conducted at the Davis Pond Diversion Canal Site, located at U.S. Highway 90 and Diversion Canal, St. Charles Parish, Louisiana.

To expedite the collection and disposal of related debris, we hereby issue this temporary exception allowing this open burning of storm debris through December 31, 2006.

Be advised that this exception to burn does not authorize the creation of a public nuisance as identified in LAC 33:III.1109.D and does not excuse the person responsible from the consequences of or the damages or injuries resulting from the burning.

If you have any questions regarding this matter, please contact Mr. Steve Aguillard of the Enforcement Division at (225) 219-3718.

Sincerely,

Harold Leggett, Ph.D
Assistant Secretary

HL:SRA

c: Capital Regional Office

ATTACHMENT 7
CURRENT KATRINA CONTACT LIST

LDEQ KATRINA RESPONSE TEAM CONTACT NUMBERS (area code 225 unless otherwise listed)
Revised 9/23/05

24-HOUR HOTLINE --- (888) 763-5424 or (225) 219-3640

ASSIGNMENT	NAME	WORK PH
Aerial Data / Overflight / Agriculture Liaison	Jeff Nolan	219-3931
Aerial Recon Team Leader / HAWK	Bruce Hammatt	219-4070
Air Dispersion Modeling	Wilbert Jordan Jim Hazlett	219-3233 219-3484
Air Pollution Issues	Chris Roberie	219-3482
Asbestos & Lead issues	Jodi Miller	219-3004
Brownfields	Raul Busquet	219-3197
Communications	Karen Gautreaux Darin Mann Rodney Mallett Jean Kelly Office Emer Prep Desk	219-3951 219-0860 219-3964 219-3966 287-7619
Complaints / Compliance Inspections	Mike Algero	219-3611
Debris Coordinator / FEMA Backup Debris Coordinator	Steve Aguillard Robert Thomas	219-3718 219-3060
DHH Contact	Bobby Savoie	763-3590
Emergency Declarations & Rules	Herman Robinson Lou Buatt	219-3980 219-3980
Emergency Operations Center	DEQ Staff	925-7395
Emergency Response Team	Jeff Meyers	219-3624
Enforcement / Office of Emergency Prep Staffing	Peggy Hatch	219-3712
EPA Region 6	Sam Coleman David Gray	219-0879 219-0879
Executive Assistance	Marian Mergist	219-3950
FEMA Liaison Backup	Bijan Sharafkhani Rob Thomas	219-3462 219-3060
Field Activity Coordinator	Hal Leggett	219-3710
Field Response	Blaise Guzzardo	219-3699
Human Resource Issues	Thomas Bickham	219-3839
Information Technology Issues	Thomas Bickham	219-3839
Laboratory Analysis	Mitch Mitchell	219-9880
Maps / GIS Coordinator	Kevin Sweeney	278-8903
Media Liaison	Darin Mann	219-0860
Monetary Donations	Thomas Bickham Herman Robinson	219-3839 219-3980
New Orleans Mayor's Office	Yarrow Ethridge	219-3972
Offers of Resource Assistance	Karen Gautreaux	219-3951

Oil Spill (LOSCO) Liaison LOSCO Spokesperson Oil Spill / Coast Guard Spokesperson	Keith Jordan Karolien Debusschere Petty Officer Russ Tippets	219-3613 219-5800 252-267-4344
Office of Emergency Preparedness (OEP)	DEQ Staff	287-7621
Permit Variances	Chuck Brown	219-3180
Radiation Sources/Contamination	Ronnie Wascom Mike Henry Joe Noble	219-3015 219-3366 219-3643
RECAP/ Toxicity	Tom Harris	219-3421
Refinery Startup	Chuck Brown	219-3180
Regional Response Team Liaison	Bob Hannah	219-4082
Response, Assessment and Recovery Plan	Mike McDaniel Thomas Bickham	219-3950 219-3839
Spill Prevention & Control	Chris Piehler	219-3609
Vendor / Innovative Technology Assessment	James Brent Percy Harris	219-3393 Fax: 219-3474 219-3389
Underground Storage Tanks	Raul Busquet	219-3197
Visitors Housing and Logistics	Tom Patterson	219-0744
Wastewater Systems / Treatment	Chris Piehler Lenny Young	219-3609 219-3013
Water Issues	Chris Piehler Barbara Romanowsky	219-3609 219-3483

Mr. BASS. Your comments will be made a part of the record. I thank you for your very important testimony. I understand that you have a lot to say, and we will review it very carefully. I appreciate your testimony. Mr. Rutledge.

STATEMENT OF BILL RUTLEDGE

Mr. RUTLEDGE. Thank you, Mr. Chairman and Mr. Bass and the committee. First off, I would like to introduce myself. My name is Bill Rutledge. I am the mayor with the city of Pontotoc, in the northern part of the state. The population of my small town is 5,253, but what makes this so close to home, back in 2001, we had a devastating tornado that came through our community. It destroyed 10 percent of our town. By saying that, one of the sister cities that we have, that we started in the State of Mississippi through the Municipal League is adopt a city program. One of those cities, the city of Pontotoc, along with other towns have adopted Bay St. Louis. Unfortunately, my mayor brother couldn't be here with us today, Mayor Eddie Favre, but Mayor Favre wanted me to share with you, his town, which is made up of 8,200 people, actually 5,000 of those families' homes were on the Bay and 60 percent of those were totally destroyed, most of them with the 25 foot tidal wave, or surge, or whatever you want to call it.

Saying all this, I want to bring something very clear to you, that a number of comments have been made about the local government, and who is in charge, or what should we do. The one thing that I want the people to realize is for the first 2 or 3 days, you have got to depend on your local people. And we found that out very quickly, and that is why one of the things that the small cities in north Mississippi did, we strictly went past the red tape, crossed the line, went straight to the officials of those communities ourselves to find out what their grocery needs were, buster pumps or chlorinators, backhoe tires for backhoes, water, food, whatever they needed, and what we did collectively, of all of north Mississippi, we provided those supplies to bring down.

But another thing that we need to make clear, though, that we have got so many good resources in the State of Mississippi that how we work together, and one of those that I want to bring attention to is the Rural Water Association. The technical assistant program, which actually brings in and helps evaluate with the local officials. We know what the problems are, we just need to know where to get the parts, and have the resources to go out there and get those parts. Rural Water, the Operators Association in other towns around is actually, we came first response with them.

I can't say enough good things about the military. The military did an outstanding job. In fact, it really helped us coordinate all of the efforts out there, but one of the problems that we run into, it seemed like there was so much paperwork or so many strings attached to everything that we are having to wait on somebody to tell us this is what we can do. Well, I can promise you small communities, we know what to do, we just need to know how where to get the supplies from and you know, how we are going to get them to us, and again, another source of resources that we had was the local churches, how they came together, how they provided the supplies and the needs that they have, and without the churches feed-

ing them, bringing in the materials and stuff, and supplies, we don't know.

Right now, kind of give you some background on where the State of Mississippi is right now, during the hurricane that hit, 97 percent of the 43 counties, the wastewater systems were out of operation. Today, as of about 2 hours ago, there is only one public wastewater facility that is not in operation. Now, I am not saying all of them are 100 percent, but I am saying that they are treating our public waste. Out of the 1,369 water systems, 486 were affected. Today, 82 of those systems are still under a rural water notice, but most of those are on a voluntary, so one of the things that we wanted to make sure was just like you all are, is to make sure we got treated, good quality drinking water, and a place to discharge.

And like with Bay St. Louis, instead of discharging into the bay or into the channels, they have a backup system where they can discharge into a lagoon, which is actually held until it can be discharged in their regional wastewater facilities. But again, I would like to only suggest that maybe—is you all meeting, is you all come up with ideas and selections. We need to never forget about the local officials, and the local folks there, because having strangers coming in and making decisions, you know, the people are going to be looking for the mayors. They will be looking for their aldermen or their supervisors, because that is who they trust. That is who lives there.

And I want to thank you for allowing me to be here. I thank you for all your prayers and your comments about the coastal area, and we do need those.

[The prepared statement of Bill Rutledge follows:]

PREPARED STATEMENT OF MAYOR BILL RUTLEDGE, CITY OF PONTOTOC AND MAYOR EDDIE FAVRE, CITY OF BAY ST. LOUIS ON BEHALF OF THE NATIONAL RURAL WATER ASSOCIATION

[Note: This testimony was completed in one day, while we concurrently operated a full-time relief operation, and we ask the Committee for all deference in our ability to document and assess the situation and make our points. We believe we can appear before the Committee without compromising our relief operations and appreciate the opportunity to testify.]

Background of Mayor Rutledge

Mr. Chairman, my name is Bill Rutledge; I have been the mayor of the City of Pontotoc, Mississippi, since 1997 (currently in my third term). Pontotoc is the northern part of the state and has a population of 5,200. I am vice president of the Mississippi Municipal League, one the board of directors of the Mississippi Rural Water Association, and a member of the Northern Mississippi Mayors Association. My background includes 27 years of military service, including the National Guard. Before becoming mayor, I was a Circuit Rider, a job that required me to travel to over 500 drinking water supplies in the state and assist those communities with operation, maintenance, and compliance with their drinking water systems. My city has had firsthand experience with disasters. In 2001, a tornado hit my community (and county) and devastated us; it wiped out 10% of our downtown area, killed six citizens, cut a swath a mile wide for 23 miles across the county, and destroyed 350 homes (not counting businesses).

Objective of My Comments

I hope to provide the Committee with the following key points in my comments:

- Illustration of what many communities experienced that were hit by hurricane Katrina.
- Explanation of what communities face in recovering from Katrina's impact.
- An attempt to provide a status of recovery of the communities in the region.

- Explanation of what the local communities see as the public health and environmental conditions of the region, and the progress that is being made on that front.
- Our (from the local perspective) initial thoughts on what has worked for recovery and why, and what we think federal policy makers should know in order to be better able to enhance federal emergency policy (both preparedness and response).

For much of my testimony, I will use the example of the City of Bay St. Louis, Mississippi, to illustrate my points and give a clear example of the situation. Bay St. Louis was one of the harder hit communities on the Gulf Coast. My community has been working with Bay St. Louis on response and recovery from the initial hours after the hurricane hit. Through our state municipal association, our cities have been paired up to provide this assistance in our "Adopt a City" initiative which has been a key effort to aide Bay St. Louis and which I will expand upon later. I am joined here today by my friend and colleague, Eddie Favre, who is the mayor of Bay St. Louis. I will read a joint statement to the Committee and both of us are happy to answer any questions.

A key objective of both of us, here today, is not to gratuitously criticize relief operations and/or federal agencies. We don't think that would be of any service to our communities. We are interested detailing what did work and providing the Committee with a local perspective of public health and environmental conditions.

Background of Mayor Favre

Eddie Favre is in his fifth term as mayor. Before he became mayor, Eddie worked in the city administration and is a certified public accountant. Bay St. Louis is a community of 8,200 (currently 5,000) population on the Bay of St. Louis (on the Gulf Coast). The community's water supply is provided by two wells and the wastewater service is maintained by 40 lift stations (sewer pumps) of varying sizes, located around the communities, with the effluent pumped to a regional wastewater system for treatment.

Summary of Katrina Impacts in Bay St. Louis

The night before the hurricane, the city staff was preparing for the water and wastewater system for the hurricane by checking the generators at the well sites and moving equipment and sensitive electrical facilities to secure areas. However, the hurricane flooded the community more than any imaginable level (significantly more than hurricane Camille, which had been the previous standard for flooding maps). Almost all of the city was under water of varying depths, some areas as much as 25 feet. Mayor Favre's own home was in the one of the hardest hit portions of the city and all that is left now are a few pilings. He has been living in the fire station since the Sunday before the hurricane, where city officials and police stayed through the storm, and where they are staging relief operations. The extreme flooding lasted approximately five hours and, combined with the approximately 150-mile-an-hour winds, devastated the city: ripping up roads, piling houses on top of each other, toppling the largest trees, destroying a few thousands homes, destroying approximately 75% of the tax base, making approximately 60% of the homes in the community uninhabitable, etc.

The hurricane knocked out electrical service and flooded all 40 sewer lift stations, making them inoperable and destroying almost all the electrical components in the lift stations. One lift station was thought to be safe and emergency response equipment was stored there. However, even this station was flooded, destroying approximately $500,000 of equipment (generators and backup electrical systems which the city desperately needed in the aftermath.

Immediately after the worst of the impacts (approximately midday on Monday), the condition of the water and wastewater system was dire. There were numerous breaks in lines; thousands of houses had been destroyed which tore lines from the ground; downed trees brought up lines; washed out roads left main lines exposed and damaged; both wells were down without power; etc. City officials started assessing damage and repairing the water supply by Monday afternoon. By Tuesday morning they were valving off lines and restoring the wells from generated power. Valving off lines is the first measure taken in restoring the water supply (restoring water pressure to portions of the system). This simply prevents the water from flowing out of the system through the breaks (which there were too many to count). Contamination can flow into the system through line breaks, and lack of pressure makes it very difficult or impossible to maintain the necessary disinfectant in the system. Of course, through this process, the entire system was under a boil water order. By Wednesday (day 2), some portion of the water supply was being restored to houses that were inhabited. The process of valving off sections of the communities

in order to maintain pressure and find/fix leaks continued round the clock for the next 3-4 days. This process was very labor intensive. Any particular valve which needed to be shut off to return water service could be buried under a series of houses (many feet deep), buried by very large trees, or ripped from the earth from collapsed buildings. Much of this work required heavy machinery (backhoes, tree removal cranes, numerous chain saws, etc.) and it could sometimes take a crew the better part of a day to remove all the stacked houses and dig for the valve.

After initially stabilizing the water system, the city public works staff began assessing the needs of the wastewater systems. Each lift station had to be rebuilt, as the electrical control panels had been destroyed by water. New parts had to be ordered and installed in each station to begin wastewater service. Waste service was partially restored in a week (at approximately 2:00 am the following Monday, the primary lift station was in service). Another 25 stations were operational by the following Friday. Every control panel had to be changed in the lift stations.

Wastewater has to go somewhere in a disrupted system—it was impossible to control all untreated effluent from the wastewater system at all times. The wastewater system was inundated with flood water. This, combined with restored water service and torn up sewer lines (opening them to be filled by sand, wood, kitchen sinks, tires, bricks, debris, etc), caused some isolated overflows or untreated wastewater. This overflow was highly diluted with rainwater, and the city initiated some ad hoc emergency treatment of the overflows by placing chlorine tablets directly into the overflow streams as they ran off from the wastewater system. Much of the runoff was being absorbed by receiving waters contaminated by the hurricane with dead animals, vehicles, and other debris washed into them. The city posted notices to stay out of the bay waters that had been contaminated from the general runoff and dead animals in the bay. Some people in distress had been washing items and bathing in the bay water.

Electrical power was restored 10 days after Katrina hit—for those 9 days the systems were operated on emergency generated power.

Current Status of Water and Sanitation

Currently, the water system is up and pressurized; however, we are finding new leaks every day and, as we restore new portions of the system and increase pressure, new breaks occur. The stress that is being placed on the water distribution system makes it fragile and prone to breaks. Loss of pressure means safety of the drinking water could be compromised. The water quality tests for coliform contamination have been met—the water has passed those tests, and the pressure is adequate, however fragile. And we are maintaining the necessary residual amount of chlorine disinfectant in the system. All this means the boil water order could be lifted. However, it is the decision of the local city officials not to lift the boil order at this time because the distribution system is (in the mayor and public works staff's opinion) still too fragile and vulnerable. The order could be lifted in the coming days. As recently as Monday of this week, a main pump had electrical failure, which caused loss of pressure. Almost all the people in the area (upwards of 5,000) are drinking bottled water and only using the city water for washing, toilets, and household needs.

Currently, the wastewater system is operating, pumping all sewage possible to our regional treatment works. The wastewater system has experienced limited, isolated overflows from broken or backed-up service lines; however, this is minimal and decreasing each day. There is a backup system for all the centrally collected sewage, in the event that the regional treatment plant can't accept our wastewater stream. As a backup, the old lagoon is available to store and treat practically any wastewater overflow from the central collection systems. This backup could handle a number of days of the sewage without any discharge to the environment.

Immediate Technical Assistance and Equipment Is Needed (Environmental Regulation is Not Needed, Nor Appropriate)

Bay St. Louis has been helped through the recovery from the initial moments following the hurricane. Numerous technical response crews have been working in the community to restore water and sanitary service. The city has had Mississippi Rural Water Circuit Riders working every day for two weeks without break. Rural Water organized most of the personnel logistics in Bay St. Louis and in the other coastal counties. Rural Water Director Pete Boone and his staff were responsible for coordinating much of the recovery and providing technical personnel. Numerous utility crews have been working in Bay St. Louis from the City of Pontotoc; Clearwater, Florida; Fort Myers, Florida; Davenport, Iowa; Navy electricians (Seabees); Air Force Red Horse Squadron; American Gas Association; Yankee Gas; the Town of Cornett, Mississippi; and others that should mentioned.

What is needed in this crisis and future crises is immediate access to technical personnel and equipment. Communities know the water is not safe long before it is declared not in compliance, and no one wants to restore safe water more than the local officials. We don't need someone to tell us we must comply, but rather, we need the help and know-how to fix the problem. The problem to solve is purely a RESOURCE problem not a REGULATORY problem. This is why regulators are of little help in these situations. The type of people that are needed are: experienced operators, electricians, machinery crews, machine repair crews, expert pipe repair personnel, contractors, etc. Mandating progress is easy; it is the "how-to" that is hard and essential to limiting harm to public health and the environment. For the "how-to," the city relied on the help from the previously mentioned volunteers.

From the mayor's perspective, water is about the most important service for public welfare. Sanitation is critical, however, a community can get by for some time with loss of sanitation. Electricity is perhaps equally as critical as water, and the return of electrical power is typically the sign that things are being pulled together, but drinking water is an immediate and essential public health and welfare service.

I was the second person Mayor Favre called after Katrina's impact in Bay St. Louis. Using resources from the City of Pontotoc, our crews loaded cargo trucks and city vehicles with backhoe tires and parts, washers, refrigerators, buster pumps, chlorinator parts, baby food, baby clothes, blankets, plastic tarp coverings, diesel fuel, oil, gas cans, grills, cooking trailers, etc., along with four-man crews, and immediately headed for Bay St. Louis. Pontotoc has been shifting in three-man crews to Bay St. Louis and the neighboring hard hit city of Waveland every four days.

These crews and the technical crews from the mentioned organizations can operate heavy machinery, repair the machinery, isolate and fix leaks, install and repair pumps, dig up mains, etc. These crews have the experience to bring the water pressure up without damaging other parts of systems. The process of valving off sections of the system, repairing the lines, bleeding out the air, and returning pressure takes skilled technical personnel. Repairing of backhoe tires proved to be a desperately needed service and critical to recovering water and sewer.

One technical field person from Florida reported the following when asked what common technical assistance is needed in damaged communities:

> "Much more complicated [than just generators]. Electrical components cleaned and replaced; control panels rebuilt; electric motors and pumps replaced or rebuilt; bypass pumps installed; generators wired direct; lift stations cleaned with vacuums or jet cleaned; leaks located and repaired with backhoes brought out from Florida; valves located and closed/opened or valves inserted to isolate areas of system; lift stations rebuilt; wastewater plants made to work with baling wire, rubber bands, bubble gum, or anything laying around. For example, wire is needed to bypass missing electrical controls so crews can go into rubble of destroyed houses and pull out wire to rewire water and wastewater plants. Think in terms of 50 McGuyvers doing whatever it takes to get water to folks and stop wastewater in the streets, in the Gulf, etc. At one plant, Florida crews walked around the destroyed warehouse/supply building to find circuit boards, fuses, whatever they needed and could find to get plant online. They even took circuit boards found and cleaned up best they could, so they could be used. These are master electricians, instrument techs, and top professionals in there areas."

Other crews from Pervis, Lamar County, and Monticello have responded to other Gulf Coast communities. In all of their cases of critical response, there was no approval process, forms, or red tape—just neighboring communities (already familiar with each other through participation in common associations, including municipal leagues and rural water associations) responding with the know-how and immediacy regardless of potential reimbursement.

What we have witnessed in this relief operation is the necessity of familiarity among the needy and contributing communities. It has been apparent that strangers can't have the relationship, familiarity, and trust needed to be helpful in an emergency situation. Our two cities have been working cooperatively for years, eliminating any learning curve which could cause delayed response and the trust deep.

Working with partners in professional associations resulted in access to a network of experts. The Rural Water Circuit Riders were able to use their contacts across the state to acquire parts, plumbers, gas technicians, pipe, etc., that only comes from networking in the association of water and wastewater utilities. By networking within the association of mayors, Bay St. Louis and other cites were able to find immediate expert contractors and volunteer crews.

This familiarity and peer assessment/review also acts as a check against any fraud. Because we have all of the leadership of the communities in the state cooper-

ative looking at the actions of all the other communities, it acts as an effective self-policing filter (a system of checks and balances).

Structural reasons that these volunteer and professional associations were so critical and effective in responding to the crises include:

- The fact that the associations' functions are directly accountable to their members (the communities), ensuring that they act in a manner most favored and beneficial to the membership.
- An understanding that time is a function of success (i.e., delayed response can significantly harm the public). In Louisiana, the EPA is conducting an in-depth assessment of every water supply (even communities with no reported problems). This type of inquiry has delayed what the communities believed was their immediate pressing need for equipment and technical assistance—to maximize public health protection. For example, while the EPA was just starting their intensive reporting assessment, communities where seeking out help where they could get it, and couldn't wait for EPA to complete its assessment. In Livingston Parish, a Circuit Rider found much of the parish's utilities without energy immediately following the hurricane. After coordinating with local officials, including fire officials and parish emergency offices, to target the most severely impacted utilities, the Circuit Rider was able to communicate with those operators via Nex-Tel (all phone communications were lost). Unable to procure water bladders from FEMA or emergency organizations, he was able to find approximately 20 water storage tanks and a colleague with a flatbed tow truck and started delivering the filled, large potable water storage containers to at least seven communities (Port Vincent, Paradise Ponte Island, Springfield, Head of Island, Killian, Bayview, and Vincent Acres). Working around the clock to keep the containers filled (10-hour supply), the pressure in the water systems was maintained. The tow truck operator was able to lift the main container on the truck high enough to create a siphon to fill the container left on-site.
- All authority is localized. There is no need to seek approval from a centralized hierarchy that is not in the middle of the situation—and real-time changes to plans and polices can be made to react to local conditions and variables.

What I have just described is the relief operations for communities' environmental services. However, there has been an allegorical response to our citizens' immediate individual human needs. The local churches have been the main response on this level. We have seen churches providing widespread operations to assist families and individuals. I personally witnessed a caravan of 71 church vehicles bringing relief to the Gulf Coast communities on one drive down highway 49 to Biloxi. In these communities, churches have been preparing meals for citizens and law enforcement officials tired of eating MREs, cooking on-site, carrying meals to people who won't leave their houses, taking in refugees, and all other acts of human kindness. There is not a church in my county that hasn't contributed to the relief.

Overall Assessment of Region's Environmental Impacts From Loss of Water and Sewer Service

The assessments from Alabama, Mississippi, and Louisiana are detailed in the following appendix.

Mr. BASS. I thank you very much, Mayor Rutledge, and I just want you to know on a personal note, I established, in my hometown of Peterborough, New Hampshire, a program to adopt the city of Collins, Mississippi. We have sent an assessment team from Peterborough, New Hampshire down there. I wish you would convey my best regards to Mayor V. O. Smith, who is a wonderful fellow. My hometown of Peterborough is going to provide them, we hope, with $100,000 in cash to help rebuild the town by the end of October.

With that, I would like to move Dr. Ragone, please, sir.

STATEMENT OF STEPHEN E. RAGONE

Mr. RAGONE. Mr. Chairman, just a correction. I am the Director of Science and Technology with the National Ground Water Association, and Dr. Schnieders is a member of the National Ground Water Association.

Mr. BASS. Fair enough. Please accept my apologies.

Mr. RAGONE. Oh, I like that other group very much. Just for the record, too, the NGWA is an organization of approximately 15,000 scientists, engineers, contractors, manufacturers, and suppliers. Our overall mission is to provide and protect groundwater.

What we have learned so far is that the situation resulting from Hurricane Katrina is understandably chaotic. Our members report that many of the hardest hit communities still do not have electricity, generators, or operational water pumps. Some report that access to these communities has been restricted.

We have learned that difficulties remain in contacting local water supply employees. People with private wells, we are told, have been left on their own to fix their water problems. More than 230,000 residents in the impacted area rely on private wells for drinking water. So far, we have heard that saltwater is in some of these wells. NGWA members are in the process of addressing these situations. We anticipate that complaints of contamination, or water supply problems will be reported as residents return home, and find they have no water or poor water quality.

Reports from areas less impacted by the storm indicate that strides are being made to return public and private water systems to operation. A concern is whether the municipal distribution infrastructure, the water pipes, remains intact, as contamination could result through breaks in the distribution pipes. Our members expect that the impact of the hurricane will be minimal even in the heavily inundated areas, for those who have properly constructed and maintained wells.

We are aware of efforts being taken to obtain baseline information and provide assistance, and we have included that in our longer written testimony. However, it is our general impression from contacts with our members in the affected region that communication problems, citizen displacement, and other storm-related disruptions, have slowed efforts to determine the scope of the problem, and to take corrective measures. It appears that improved predisaster planning, training, and coordination between government officials and private sector water well professionals could have improved response time. Planning, coordination, and training of local officials and private sector entities prior to the disaster seems to

be a critical missing component in helping to make recovery efforts more effective.

Although standard disinfection protocols are being distributed by many agencies in the area, we believe that additional disinfection protocols may be required, in order to mitigate the varying levels of contamination. For example, shock chlorination, the traditional approach to well disinfection, does not always solve the problem for those with inundated wells, or where general groundwater quality has been impacted. In fact, shock chlorination can cause more long-term harm than good. This is especially true when floodwaters contain very high loads of sediment, debris, or chemical and biological contaminants. Also, and very importantly, studies have shown that older wells are more susceptible to contamination and flooding, and may require different decontamination protocols than more modern wells.

The National Ground Water Association, under a contract with FEMA, presented a report to the agency in 2002, entitled "Field Evaluation of Emergency Well Disinfection for Contamination Events." This field study examined Hurricane Floyd's impact on wells in North Carolina and adjacent Atlanta coastal areas, and specifically, well-disinfection efficacy. Some of the recommendations included in that report are attached to my written testimony as Appendix 1.

The recommendations highlight our concern that a more strategic, community-based approach is needed to prepare for and respond to natural disasters and terrorist acts. If you would like a copy of this report, we would be happy to provide it. The NGWA has been working to provided needed information and protocols for emergency response. We have developed website products, certified professionals, offered training programs and materials, as well as undertaken our own research to help prepare the industry, well owners, and government officials.

However, we recognize that much more needs to be done. We look forward to working with Federal, state, local, private sector partners to fill research, training, and information gaps. The NGWA is happy to have had the chance to participate in this hearing. An important reason for being here, beyond our concern about the immediate crisis caused by Hurricane Katrina, is to encourage the development of a strategy that will ensure immediate, cost effective, and appropriate community-based responses to future disasters and terrorist acts that may disrupt our drinking water supplies.

Thank you very much.

[The prepared statement of Stephen E. Ragone follows:]

PREPARED STATEMENT OF STEPHEN E. RAGONE, DIRECTOR OF SCIENCE AND TECHNOLOGY, THE NATIONAL GROUND WATER ASSOCIATION

INTRODUCTION

Good morning. My name is Dr. Stephen Ragone. I am the Director for Science and Technology for the National Ground Water Association (NGWA). The NGWA is an organization of approximately 15,000 scientists, engineers, contractors, manufacturers and suppliers. The NGWA's overall mission is to provide and protect ground water. I would first like to thank the Committee for this opportunity to speak and acknowledge my colleague, Dr. John Schnieders, principal chemist for Water Systems Engineering, Inc. who helped me prepare these remarks.

Approximately 52% of Alabama's, 100% of Mississippi's and 75% of Louisiana's populations regularly depend on ground water for their drinking water supply.[1] Over 513,000 wells are used to provide drinking water to the three states' residents (Table 1). Of those, an estimated 234,545 household well systems in Alabama, Louisiana, and Mississippi counties are estimated to be in areas impacted by Hurricane Katrina and are eligible for individual disaster assistance funds from FEMA (Table 2). At this time we cannot provide the Committee with a number of wells that have been flooded versus other levels of impact.

WHAT DO WE KNOW

What we have learned so far is that the situation is, understandably, chaotic. Our members report that many in the hardest hit communities still do not have electricity, generators or operational water pumps. Some report that access to these communities has been restricted. There also have been reports of saltwater in some wells. NGWA members are in the process of addressing these situations. However, as more residents return, it is anticipated that complaints will continue to come in when people find they have no water or poor quality water. Reports from areas less impacted by the storm are that strides are being made to return public and private water systems to operation. A top concern is whether the municipal distribution infrastructure—the water pipes "remains intact as contamination could result through breaks in the distribution pipes. We've heard that difficulties remain in contacting water system employees. Members expect that the impact of the hurricane will be minimal—even in heavily inundated areas—for those who have properly constructed and maintained wells.

We are also aware of efforts being undertaken to obtain baseline information or provide assistance. For example the Louisiana Department of Health and Hospitals, in conjunction with the U.S. EPA and the Louisiana Rural Water Association, are offering free water testing to residents in certain Louisiana parishes with flooded household wells. As part of this effort, residents are being provided with information on sample collection and water system disinfection. The U.S. EPA and the Louisiana Department of Environmental Quality (DEQ) have information regarding well-testing and disinfection on their website. Additionally, the U.S. Geological Survey is testing wells in inundated areas to assess whether brackish water has entered into the subsurface. We also have reports that Louisiana DEQ is in the initial stages of doing some VOCs testing. A report we received from the Louisiana Department of Transportation and Development indicate they are currently testing public water supplies but an inventory of flooded, and or damaged domestic wells is not yet available. However, our members in the Louisiana Ground Water Association reported that well drillers are working around the clock to return household wells to potability.

It is our general impression from contacts with our members in the region that communication problems, other relief efforts, and citizen displacement remain challenges to identifying the scope of the problem and remediating affected wells. It appears that improved pre-disaster planning, training, and coordination between government officials and private sector water well professionals could have lessened the challenges.

Planning, coordination, and training of local officials and private sector entities prior to the disaster seem to be critical missing components in helping to make existing efforts more effective. Beyond initial and standard protocols being distributed, long-term strategies should ensure that appropriate de-contamination protocols are available for varying levels of contamination, well design, well size, and hydrogeologic variables. For example, shock chlorination—the traditional approach to well disinfection—does not always solve the problem for those with inundated wells or where general ground water quality has been impacted. In fact, shock chlorination can cause more long-term harm than good. This is especially true when floodwaters contain very high loads of sediment, debris, as well as, chemical and biological contaminants. In such cases the wells, both public and private, may require different and/or additional cleaning procedures. This concern is exacerbated in several areas impacted by Hurricane Katrina where refineries and other industries are present. Studies have also shown that older wells are more susceptible to contamination and flooding, and may require different approaches than more modern wells.[2]

[1] U.S. Geological Survey, March 2004 report on 2000 water use

[2] Centers for Disease Control and Prevention. A Survey of the Quality of Wter Drawn from Domestic Wells in Nine Midwest States. September 1998.

FUTURE STRATEGIES REQUIRE COORDINATION

The National Ground Water Association, under a contract with FEMA, presented a report to the agency in 2002 entitled "Field Evaluation of Emergency Well Disinfection for Contamination Events." This field study examined the 1999 Hurricane Floyd's impact on North Carolina and adjacent Atlantic coastal areas—specifically well disinfection efficacy. We also included in the report recommendations on how to address household water wells in future natural and manmade disasters. If you would like a copy of this report please let us know. (Appendix I).

Our recommendations outline a plan that educates and trains local private sector personnel to complement government efforts in a forward thinking manner. We discuss the development of county/district teams trained and equipped to evaluate, help and conduct needed immediate repairs of wells as needed to restore private water supply function and potability. These teams would include local government environmental health staff, private-sector personnel experienced in well and pump service and other people with specific knowledge of local ground water quality and occurrence, such as hydrogeologists. The teams would be trained in both evaluation and pump repair. Additionally, these teams would work to train retail workers and "neighborhood helpers" who work with pumps, plumbing, chemical selection and/or generally mechanical to aide in post-emergency efforts. As for disinfection efficacy, as discussed previously, there are standard disinfection methods but it will be important that residents and water suppliers follow the appropriate protocols for the appropriate water supply and take into account contaminants present, size of well, aquifer hydraulic conductivity, and flood water depth and quality. Local health and water entities, both governmental and private-sector, should have this information readily available for themselves and the public at large.

The NGWA has been working in this area. We have developed web site products, certified professionals, offered training programs and materials, as well as undertaken research to help prepare the industry, well owners and government officials. However, more has to be done. We are looking forward to working with our federal, state, local and private sector partners to fill research, training and information gaps and enhance state and local response planning.

The NGWA is happy to have had the chance to participate in this hearing. An important reason for being here, beyond our concern about the immediate crisis caused by Hurricane Katrina, is to encourage this country to develop a strategy that will ensure immediate, cost-effective and appropriate responses to future natural disasters or terrorist's acts that disrupt our drinking water supplies. We look forward to working with you and serving as a resource as more information on the impacts of Katrina on ground water supplies is collected and analyzed.

Table 1

State Well Numbers

State	Community Wells [3]	Household Wells [4]	Total for State
Alabama	764	201,111	201,875
Mississippi	2,712	122,452	125,164
Louisiana	3,338	182,926	186,264
Total	6,814	506,489	513,303

[3] US EPA, 2004
[4] Based on 1990 Census data, last year in which household wells were counted.

Table 2

Estimated Household Wells in Designated Disaster Counties

(counties where individual assistance available)

Alabama		Louisiana		Mississippi	
Baldwin	11,902	Acadia	6,279	Adams	378
Greene	1,034	Ascension	9,942	Amite	1,755
Hale	1,301	Assumption	92	Attala	807
Mobile1	4,708	Calcasieu	10,012	Choctaw	200
Pickens	1,378	Cameron	472	Claiborne	162
Tuscaloosa	3,446	East Baton Rouge	1,031	Clarke	1,144
Washington	2,941	East Feliciana	1,041	Copiah	674
		Iberia	4,392	Covington	414
		Iberville	638	Forrest	853

Table 2—Continued

Estimated Household Wells in Designated Disaster Counties

(counties where individual assistance available)

Alabama	Louisiana		Mississippi	
	Jefferson	54	Franklin	1,280
	Jefferson Davis	1,904	George	4,289
	Lafayette	13,311	Greene	1,323
	Lafourche	3	Hancock	5,424
	Livingston	7,874	Harrison	12,726
	Orleans	1,024	Hinds	1,246
	Plaquemines	37	Jackson	8,723
	Pointe Coupee	1,162	Jasper	199
	St. Bernard	10	Jefferson	142
	St. Charles	33	Jefferson Davis	352
	St. Helena	1,016	Jones	640
	St. James	56	Kemper	184
	St. John	239	Lamar	1,470
	St. Martin	2,482	Lauderdale	2,276
	St. Mary	441	Lawrence	483
	St. Tammany	21,787	Leake	860
	Tangipahoa	14,035	Lincoln	4,372
	Terrebonne	23	Lowndes	3,167
	Vermilion	9,867	Madison	506
	Washington	6,594	Marion	1,757
	West Baton Rouge	147	Neshoba	599
	West Feliciana	59	Newton	1,603
			Noxubee	1,128
			Oktibbeha	320
			Pearl River	5,957
			Perry	870
			Pike	4,344
			Rankin	871
			Scott	487
			Simpson	736
			Smith	329
			Stone	1,594
			Walthall	2,204
			Warren	389
			Wayne	1,388
			Wilkinson	499
			Winston	180
			Yazoo	474
36,710		116,057		81,778

Appendix I

EXCERPT FROM FIELD EVALUATION OF EMERGENCY WELL DISINFECTION FOR CONTAMINATION EVENTS: FINAL PROJECT REPORT

PLAN FOR RETURNING WATER SUPPLY WELLS INUNDATED BY FLOOD

The following is a set of recommendations for planning and implementing a program of returning water supply wells inundated by flood to potable status. Implementing these activities will require coordination among county departments and among local jurisdictions, the state, and supporting federal agencies such as FEMA, and also with the private sector. An appropriate organizational umbrella under which this process could operate is state/county emergency management.

1. In each county/district of local government environmental health, teams will be trained and equipped to evaluate, help and conduct needed immediate repairs of wells as needed to restore private water supply function and potability. The team should include government environmental health staff, private-sector personnel experienced in well and pump service, and other people with specific knowledge of local ground water quality and occurrence, such as hydrogeologists. The teams need to be trained in both a) evaluation and expedient fixes (pump repair) and b) human interaction (customer relations). Private sector team's members should be on retainer or standing purchase order.

2. These teams in turn should train a) retail workers, such as those working in hardware stores and home-improvement superstores who work with pumps, plumbing, and chemical selection and b) "neighborhood helpers"—those people found in any neighborhood or community who are capable, helpful and competent in fixing things—to assist people with basic pump repair and well disinfection. Train them to safely and effectively deal with the well problems that do not require contractor equipment, such as jet pump repair or shallow well disinfection, the specifics of safety issues, and water sampling. Such trained personnel, upon passing a practical examination, would be awarded a limited-time certification in emergency water supply assistance. The local environmental health agency would maintain and publicize a current list of stores with such certified personnel available. Certified neighborhood helpers would identify themselves to emergency response personnel and neighbors, and be known to well ERP team members. All such responders must be insured or otherwise protected under state "good Samaritan" provisions to the extent appropriate.

3. Draft and supply simply worded and illustrated fact sheets with detailed recommendations for safe pump function restoration, well flushing, and well disinfection, with versions in both English and widely used secondary languages such as Spanish.

4. In support of activities triggered under the local well restoration ERP:

A. Have wells spotted and located on county GIS plat maps, with a database of essential well characteristics (type, depth, diameter). Hard-copy maps and GIS electronic file backups should be generated regularly, made available to the well response teams, and stored safely in case of emergency.

B. Collect data on hydrogeology (aquifer tapped by wells, protective layers, water tables) and a suite of physical-chemical and microbial ecology parameters that provide a basis for understanding an ambient baseline condition. With such an ambient baseline recorded, deviations from the expected hydrogeochemical profile of a well can be recognized, even if basic regulatory parameters are negative or inconclusive. Include this hydrogeochemical data in the GIS database and as map layers for use by the well ERP team.

C. The plan should include a well triage strategy for use in the event of an emergency, as follows:
- Start with a rapid survey (aided by having wells finely located) to assess the situation and to formulate a response.
- Accurately mark and bypass 2-in. deep wells with in-line jets, and 2-in. jetted or driven wells, and other wells requiring specific training and equipment to restore. Have people pump them, but leave treatment or replacement to an equipped contractor.
- Instruct people on how to treat shallow bored wells.
- Sample wells for total coli form once restored to function and pumped. Certified helpers would supplement environmental health in this.
- Plan and implement follow-up testing and additional response, such as ordering and assisting impaired well replacement.

5. Equip response teams as follows:

A. A supply of pump sets for circulating chlorine and pumping, equipped as needed (hoses, valves, fittings) and working. Include a generator, tools, parts and instructions to install functional systems on typical installations. Provide and periodically update reliable telephone numbers for troubleshooting and installation assistance.

B. As only Ca(OCl)2 has a lengthy shelf life (when stored cool and dry), keep some of this on hand in various forms for use until trucks can bring in sodium hypochlorite. Include any associated treatment chemicals such as vinegar for acidizing. Rotate stocks semiannually. Have on hand measuring cups and laminated sheets with information on dosing volumes for wells by diameter and depth.

C. Well water testing equipment similar to that used in this study—maintained, calibrated, and with fresh batteries—and sampling supplies for (limited) onsite and laboratory analysis of TC, nitrates, and selected other contaminants. Testing should be part of triage and follow up.

6. Local environmental health jurisdictions should aggressively work to reduce the number of substandard and unsafe private water supplies vulnerable to flooding inundation.

A. Begin a public information campaign to educate well owners and users about safe and unsafe or vulnerable water supplies and how they can be tested and improved.

B. Deficiencies in specific well and pump installations (poorly designed, vulnerable to inundation or damage during credible flooding events, or otherwise unsafe in addition to not meeting state rules) identified during mapping efforts should be called to the attention of property owners and responsible parties, with procedures and schedules for resolution provided.

7. This inspection and response plan should have a regular review and revision cycle with measurable goals set.

Immediate Response and Prioritizing Follow-up Response

1. Determine that an emergency exists, assess its magnitude and implement the well restoration ERP elements appropriate to the emergency.

2. Broadcast instructions for safely restoring well function and activate the network of certified well responders and professional contractors. Make instructions for disinfection that can be attempted by well owners and contacts for assistance available to affected residents.

3. As soon as it is safe, well ERP teams begin the reconnaissance to determine necessary responses for specific wells and assign them to the appropriate responders. Use the predetermined well designations from disaster-preparedness inspections (Section 7.1).

A. Inform residents of the response plan and schedule. Provide a point of contact for residents, and assist them as needed in obtaining emergency potable and wash water.

B. In a site visit: 1) Identify and record (narrated video or by photography with notation) problems for follow up later. 2) As soon as possible, restore well function and instruct residents to pump wells several hours to clear contamination. 3) Sample for contamination parameters.

4. If analysis results indicate that contamination has occurred (or may have occurred), implement disinfection as follows.

Emergency Disinfection Methods

While disinfection procedures are somewhat specific to the individual well's dimensions, design and conditions, the following are general requirements of emergency disinfection in response to inundation.

1. As needed, restore pump function as needed and pump inundated wells clear for several hours to clear dirt and flood water contaminants. Do not pump flush water through treatment and distribution systems, but discharge from the first flushing tap. The time required is dependent on well size, aquifer hydraulic conductivity, and flood water depth and quality. As few as three hours and as many as 24 may be needed, and reasonable numbers should be determined for local conditions.

2. In a clean mixing tank or container, mix a solution with 100 mg/L (ppm) chlorine, maximized for hypochlorous acid: In the appropriate volume (one well bore volume—determine by well diameter, depth, and depth to water level) of clean water, acidify with white distilled food-grade vinegar or more concentrated food-grade acetic acid to approximately pH 5.9 (varies according to water pH and buffering capacity). Then mix in the sodium hypochlorite solution (generally 5-12 %) volume needed to make a 100-ppm solution. Adjust pH as needed to pH 6.5 or less. Alternative: Use powdered or granular calcium hypochlorite for chlorine and muriatic or sulfamic acid for acidifier. People conducting this mixing must be trained in the specific chemical safety issues of these chemicals and mixtures and their use and be equipped to avoid injury and to respond to spills.

3. Drain or pump to the bottom of the well.

4. Start agitation or pumping to pull solution upward throughout the water column.

5. Allow to react up to 24 hr.

6. Pump off to waste, avoiding environmental harm, until measured total chlorine is <0.2 mg/L.

7. Conduct water system disinfection per state rules or recommendations.

8. After one week, test for total coli form bacteria and nitrates. In the interim, instruct residents to boil water for drinking and cooking. Exception: Boiling should be avoided if a history of high nitrates exists, substitute filtration.

9. If wells are substandard at inspection, or do not respond to treatment, follow up with action to require replacement or repair, and provide the appropriate assistance to make this happen.

Specific steps for a 2-in in-line jet well)

1. Pump clear 3 well volumes or fresh ground water by parameters

2. Mix in large plastic tubs: vinegar for acidifying and sufficient NaOCl to treat 2 well volumes
3. Pull in-well pipe and jet (inspect and clean)
4. Displace in chlorine solution: Air used to displace solution downward and a bailer to pull solution upward through the water column
5. Wait 24 hr
6. Reinstall pump components and hook up jet pump
7. Pump off to clear
8. Pump one well volume + after Cl is < 0.2 mg/L and test for TC and ion parameters.
9. In one week, test for indicator parameters.

Specific steps for a bored well:

1. In clean, new 32-gallon plastic trash cans, mix vinegar and NaOCl or Ca(OCl)2 to make a well-bore volume of 100-mg/L solution, and permit residues to settle.
2. Pump well down and clear.
3. Dose with chlorine solution and brush well walls
4. Let refill if slow to respond after emptying
5. Recirculate with jet pump
6. Wait 24 hr
7. Pump clear (to < 0.2 mg/L by chlorine test kit)
8. Pump more than one well volume, then test for indicator parameters

Follow up

1. Take steps to replace vulnerable and substandard well water supplies, with specific plans, goals and schedules, developed through consultation with the public, regulatory officials, stakeholders, and funding sources, and prevent installation of at-risk private water supplies in the future.
2. Review the well restoration ERP and its implementation and make adjustments needed.

The above recommended protocols should be viewed as being preliminary and subject to review and revision by the implementing agencies.

Mr. BASS. Thank you very much, Dr. Ragone. Mr. Olson, you are next.

STATEMENT OF ERIK D. OLSON

Mr. OLSON. Thank you, Mr. Chairman. Thank you, Mr. Chairman, and thanks for inviting me to testify. I am with the Natural Resources Defense Council, but I also wanted to mention that we have been working closely with a variety of organization from Louisiana, Mississippi, and Alabama, to get input in daily calls and so on, with Dr. Beverly Wright, to my left, and with a variety of other groups, including Louisiana Environmental Network and many others that are expert in observing what is happening every day.

We believe that Katrina really is, perhaps, the single worst environmental catastrophe that has ever befallen the United States from a natural disaster. And obviously, there have been many environmental disasters, but the impacts of this, we are just beginning to learn. We have heard a lot of anecdotal reports, at least, of health effects in people that have been exposed, police officers, first responders, and the public that are reporting rashes and blisters, as a result of touching some of the water. Open sores that are not responsive to antibiotics. Fumes that are causing asthma and respiratory problems.

We strongly believe that this shouldn't just be anecdotal reporting. There should be ongoing surveillance of people that are going back into these communities. We have heard about a young man who went into some of the water with hip waders, and had a small amount of water splashed into his hip wading boots, and came out with blisters the same day. So, clearly, there are problems. There

is not safe drinking water, as we just heard EPA testify, for, I believe they said 2.3 million people to this day. In New Orleans proper, the water is not safe to drink, yet hundreds of thousands of people are being told that they can come back into town.

American Water Works Association last week released an estimate that it was going to cost $2.25 billion just to rehabilitate the drinking water supplies in this area. There are widespread toxins as well. What I have primarily been talking about are some of the bacterial and related problems, but the toxic problems and the oil spills are a serious issue. By some counts, we heard just moments ago a witness say that it was around 400 oil and hazardous chemical spills. Previous estimates posted on government websites were there were 575 recorded oil and hazardous chemical spills, over 7 million gallons being spilled.

Just imagine 350,000 automobiles that have been destroyed by this. How much oil, how much gasoline, how many toxic substances are released there? Also, hundreds of industrial facilities, dozens of hazardous waste and other related facilities that were inundated. We are very concerned about the long term effects of this.

I wanted to mention a couple of important points. One is the air monitoring that has been released. I have in my testimony a table, which is derived directly from the EPA's website. On page 3 of our testimony, we compare the levels of benzene, a known human carcinogen, and a toxin to the human system, we compare the levels measured by EPA in New Orleans proper, to the 2 week safety standard, in other words, the standard that you could be safely exposed to for around 2 weeks. That safety standard is five parts per billion, and over half of the samples taken in the city were over that standard. And we list many sites where it was more than double the safety standard.

We are very concerned that some public statements of the agency official suggest that it is safe to return, yet their own monitoring is showing that it is well over the 2 week, or so-called intermediate safety standard. It might be safe to go in for a day and come back out, but it is not safe to stay there for a period of time.

In addition, returning citizens are really not getting the kind of information they need about what is safe and what is not. We just heard witnesses say that it is the local government's responsibility ultimately. We strongly disagree with that. We believe that the Federal Government, the Federal EPA, has the legal authority and the responsibility, both as a legal matter and as a moral matter, to make sure that when people are returning to these communities, that they are going to get accurate information, and that they will be safe.

Certainly, I am sure as Dr. Wright will testify to, we are very concerned about the disproportionate effects of some of these toxins. We are concerned that cleanup be certain to clean up the low income and African-American communities, as well as the rest of the community. We want to make sure there is full community involvement in those cleanup decisions.

We need expanded testing. The testing EPA showed up on the map just moments ago is certainly, there are a lot of samples that have been taken in New Orleans proper. What about the hundreds of other locations where there are industrial facilities, all across

the three states? What about all of the locations where we know drinking water supplies are knocked out? What about all the underground storage tanks that have been knocked out? What about the millions of gallons that have been spilled elsewhere? Are we monitoring that, and making that information available to the public in Mississippi, in Alabama, in locations other than New Orleans?

And finally, I wanted to summarize the other major concerns we have, including the enormous amount of debris, 100 million cubic yards by some estimates, of debris. Is that going to be burned, as some are suggesting? It is a very deep concern that if there is going to widespread open burning. And in addition, we are very concerned that the cleanup standards be very high, and that we not adopt wide waivers. We heard EPA say that they have not yet identified any need for broad waivers. We have identified no need, and we are happy to submit to the record the numerous examples of waivers that are already allowed under current law.

Thank you.

[The prepared statement of Erik D. Olson follows:]

PREPARED STATEMENT OF ERIK D. OLSON, SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL

Introduction

Thank you for the opportunity to present testimony today. I am Erik D. Olson, a Senior Attorney with the Natural Resources Defense Council (NRDC), a national non-profit public interest organization dedicated to the protection of public health and the environment, with over 500,000 members. As part of my work at NRDC, I have been helping to coordinate our response to Katrina. We have been working closely in this effort with a large number of other environmental, environmental justice, public health, medical, water industry [what's "water industry"??], and other groups, including many organizations from Louisiana and Mississippi. I am in daily touch with hurricane survivors and with experts and others who are tracking the effects of this devastating storm, including my son who is assisting with hurricane relief efforts in Louisiana. In addition, I serve as chair of the Campaign for Safe & Affordable Drinking Water, an alliance of over 300 public health, consumer, medical, nursing, environmental, and other groups that works to ensure that all Americans have safe drinking water, and that has taken a special interest in the impacts of Katrina. Today, however, I appear only on behalf of NRDC.

Mr. Chairman and other members of the Subcommittee, Katrina is perhaps the single worst environmental catastrophe ever to befall the United States as a result of a natural disaster. As any of the brave and stalwart citizens of Louisiana, Mississippi, and Alabama who survived Hurricane Katrina will tell you, this disaster has left an indelible mark on them and their families, communities, and environment. The loss of human life and widespread human misery that Katrina caused and continues to cause as we sit in this room today, are simply unfathomable.

I have been asked today to focus on the environmental effects of Katrina—and in particular on the potential effects of toxins in the storm-ravaged area. Specifically, I intend to focus primarily on the known and potential human health effects of the widespread releases of raw sewage, petroleum, and other toxins into the environment.

Reports of Severe Pollution and Illnesses

We are receiving regular, albeit anecdotal, reports of police, rescue workers, and ordinary people who have returned to or stayed in flooded areas and have become ill after contact with the flood water or muck. Reports of rashes and blisters where skin has contacted polluted water, infected sores that are not responsive to antibiotics, nausea, and vomiting are legion. Respiratory problems—including asthma among many people exposed to fumes in contaminated areas—also are being reported.

One woman's brother returned to his home to try to recover a few belongings, only to vomit three times upon entering the home due to the stench of sewage, decay, and chemicals. I spoke to the mother of a young man who wore hip waders into

floodwaters, but whose skin came in contact with the toxic water. The same day, he developed a rash and blisters where his skin had touched the water. We have heard from many local citizens about police officers and other emergency workers who have come into contact with the polluted flood water, only to develop rashes and other symptoms. The long-term effects of this toxic exposure are unknown, and of profound concern to us and to many local citizens.

One public health nurse working with the Red Cross spoke to us and reported that she had seen, by her count, over a thousand evacuees in Mississippi, but she had no tetanus or hepatitis vaccine to give to evacuees who were planning to return home to their water-soaked communities.

As the flood water recedes, and the toxin-laced sediment and residue dries, a fine dust begins to swirl with wind or disturbance. This fine, toxic dust presents a serious risk to citizens if inhaled.

In many of the hardest-hit areas, people returning home do not have access to emergency medical services, nor to nearby health clinics, physicians, or hospital emergency rooms. Communications also remain difficult. It is therefore difficult to determine how widespread and serious these problems are, but it is likely that many people are suffering without appropriate medical care. There is an urgent need for better-coordinated and more comprehensive medical care and for ongoing disease surveillance.

There are enormous health hazards from the runoff, which contains staggering quantities of untreated human and animal waste and decaying plants and animals. These risks are particularly pronounced as hundreds of thousands of people return to areas where the muck and standing water are a teeming stew of parasites and dangerous bacteria.

Spills and Leaks of Oil and Toxic Chemicals are Numerous and Widespread

According to U.S. Coast Guard and EPA data, as of September 18, 575 Katrina-related spills of petroleum or hazardous chemical had been reported. Just eleven significant spills released approximately 7 million gallons of oil, a portion of which was contained or cleaned up, but much of which was not.

We also understand that there are 350,000 or more ruined automobiles and other vehicles caught by the flooding that will have to be dealt with. The amount of gasoline and toxic fluids in these vehicles alone is enough to give one pause; if each gas tank contained approximately 8 gallons of gasoline, this adds nearly 3 million additional gallons to the 7 million-gallon total noted above. By comparison, 11 million gallons of oil were released in the Exxon Valdez disaster.

Moreover, at least four Superfund hazardous waste sites in the New Orleans area were hit by the storm. Across the storm-ravaged areas of Louisiana, Mississippi, and Alabama dozens of other toxic waste sites, major industrial facilities, ports, barges, and vessels that handle enormous quantities of oil and hazardous chemicals took a direct blow from Katrina.

In addition to oil and chemical spills, and potential releases from toxic waste or industrial facilities, one major source of toxins that has received very little public attention to date is the toxic sediment that has accumulated at the bottom of many of the lakes, rivers, and streams in industrialized areas over many decades due to industrial spills. These toxic underwater hotspots have long been of concern to state and federal officials. According to experts with whom we have spoken in Louisiana, many of these toxic hotspots have now been stirred up, and toxic sediment has been re-suspended, and re-deposited across large land areas, including in residential communities, by storm surge and floodwater.

To date, virtually no public information is available about toxic chemical levels in areas outside of New Orleans area. Moreover, there have been virtually no public reports of the results of chemical testing or inspections of storm-damaged industrial facilities outside of this immediate area.

EPA Monitoring Shows Dangerous Levels of Air Contamination from Spills & Releases, but Agency Public Statements Offer Misleading Reassurances to the Public About Safety

Agency data also show that elevated levels of toxic chemicals such as benzene and xylene, in some cases levels above the 24-hour safety limits, have been found in the air adjacent to spills.

Perhaps more troublingly, EPA has released air monitoring data from its Trace Atmospheric Gas Analyser (TAGA) buses and other monitors used across New Orleans, showing that contaminants are at unsafe levels for rehabitating certain parts of the city. NRDC has reached this conclusion by comparing benzene monitoring results, posted on EPA's web site, to levels that the National Institute of Environmental Health Sciences (NIEHS) established to protect people from intermediate-

term (e.g., two-week) exposures to this chemical—a level of 4 ppb. Significantly, in 25% of the areas sampled in New Orleans, EPA monitoring shows levels of benzene more then twice this NIEHS intermediate safety level. Yet EPA's charts and discussions on its website only compare elevated air pollution levels to the much higher (50 ppb) acute NIEHS safety level—that is, to a level that is only considered safe for very short-term (e.g., 24-hour) exposure. Moreover, no air or other sampling has been publicly reported for most areas around spills or chemical facilities outside of New Orleans.

New Orleans Sampling Locations with More than Twice the NIEHS Safe Level of Exposure for Benzene

Location	PPB
Murphy Oil Refinery	88.0-170.0
LaSalle and Tulane Ave	8.2
Weidman and Monroe	8.5
Tall Timbers before Silver Maple Ct.	8.6
Cleveland St. and South Johnson	18.0
Barataria Blvd between Jessie St. and Rt. 18	11.0
N. Rampart and Canal	14.0
Wall Blvd and Pace	15.0
Tullis and Woodland near Cypress Grove Ct.	15.3
Glenwood Drive & Fairmont	11.0
Avenue A and Hector	21.0
Duplessis St. and Park St.	16.5
E. Maple Ridge Dr. and Maple Ridge Oak	9.0
Convention Center Blvd.	9.8
Oak Lawn and Veterans	8.5

Note: NRDC compared sampled concentrations to safe levels (4 ppb) for exposure over a two week period as calculated by NIEHS. This comparison is discussed in our testimony.

Despite the inadequacy of these test results, EPA asserts in its public materials that, "[t]he screening results indicated that chemical concentrations in most areas are below ATSDR health standards of concern." http://www.epa.gov/katrina/testresults/air/taga.html. These kinds of agency statements have undoubtedly led to widespread confusion and may have misled the public and local officials about the safety of returning to polluted areas.

Returning Citizens and Many Responders Do Not Understand the Risks and Are Not Using Protective Clothing or Gear

In light of the lack of adequate and accurate public information, people are returning to toxin-soaked areas without understanding the risks, and without being provided the proper protections, warnings, or knowledge. We are extremely concerned that there may be widespread illnesses and toxic exposure effects as toxin-soaked areas are repopulated.

Many citizens are returning to petroleum or other toxin-tainted areas, generally using no masks or special protective clothing. EPA data show that not only does air pollution present a risk, but flood waters contain high levels of bacteria and other waterborne pathogens from raw sewage, and in many areas contain elevated levels of petroleum, lead, and other toxins.

Many people—both ordinary citizens and emergency workers or police personnel—are breathing petroleum vapors, swishing through petroleum and other toxin-polluted water, or cleaning up polluted homes, businesses, and debris, with little or no personal protection. Whereas contract cleanup workers don Tyvek "moon suits" to go about their business of cleaning up oil and hazmat spills, the public generally is using no protection even though they may well experience dangerous levels of exposure. The National Contingency Plan and EPA and OSHA regulations require that anyone working on response to an oil or hazardous substance spill be provided with appropriate protective gear, and contract cleanup workers are in some cases wearing protective gear. But according to reports we have received, many local police and other emergency workers in the area are not wearing protection such as respirators and protective clothing.

Environmental Injustices Will be Exacerbated Unless Cleanup and Rebuilding Changes

There is a longstanding legacy of unfair and disproportionate toxic exposures to low income, predominantly African American communities in the New Orleans area

and in much of Louisiana, Mississippi, and Alabama. This has resulted from years of industrial activity and waste disposal practices that hit these communities far harder than higher income, predominantly white communities. TRI and superfund facilities are located more often in low income areas and therefore are at greater risk to post-Katrina exposure. As cleanup proceeds and rebuilding begins, every effort must be made to remedy these environmental injustices through full cleanup, fair rebuilding practices, and full partnership with affected communities.

Toxics Testing Must Be Enormously Expanded, and Results Must Be Widely and Immediately Disseminated in a Publicly Accessible Format

EPA has released a limited amount of water, sediment, and air testing for the New Orleans area. There are literally hundreds of reported oil and toxics spills, industrial waste dumps, and industrial facilities that handle substantial quantities of toxic chemicals across Louisiana, Mississippi, and Alabama that were hit hard by Katrina, but for which there has been no reported toxics testing.

In addition, even in those areas around New Orleans that were tested, often only a few samples have been reported for most locations, triggering concern that as water recedes or washes in from other locations, as re-flooding from Rita occurs, as leaks or spills spread, as waste leaches, or as other conditions change, toxic levels are likely to change as well.

We also are deeply concerned that EPA has delayed reporting many of its test results. As hundreds of thousands of people are returning to evacuated communities, it is critical that EPA release its data immediately upon receiving them, to assure that the public and local officials are informed about the risks.

In addition, we have heard from many local citizens that EPA's method of releasing the test results—on the web—is not an effective way to get information to the vast majority of evacuees who do not have internet access and are often not able to digest and understand the data. EPA and CDC's press conference warning of the risks of coming into contact with the flood waters was helpful, but came so long ago that it is for many a distant memory that does not touch upon the hazards today from the water, sediments, mold and other toxins citizens are likely to encounter as they return.

The lack of regular, understandable, and repeatedly-reiterated information through the mainstream media about the toxics threats and the need to take appropriate precautions (e.g. rubber boots, Tyvek suits, masks or respirators, impermeable gloves) is likely to lead to continued widespread misunderstandings and health threats.

EPA and Federal Officials Have "Punted" Their Responsibility to Assure the Safety of Returnees

EPA is the nation's primary repository of expertise and regulatory and enforcement authority for controlling and responding to environmental toxin threats to the public's health. As such, the agency must assume the responsibility for assuring, after the massive spills and releases of oil and hazardous substances in the wake of Katrina, that the health of citizens living in or returning to the affected communities is fully protected.

Under such laws as the Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund), and Oil Pollution Act (OPA), and under its own National Contingency Plan (NCP) regulations, EPA bears the lead responsibility for evaluating and acting to remedy environmental health threats. With respect to the Katrina response, EPA has the legal authority and both the moral and legal obligation to ensure that the health of citizens potentially exposed to toxic chemicals as a result of hazardous substance or oil releases is fully protected.

The NCP regulations impose numerous obligations on the agency to ensure that its response to releases of hazardous substances or oil protect exposed citizens. For example, the NCP requires that after an oil spill, "[d]efensive actions *shall* begin as soon as possible to prevent, minimize, or mitigate threat(s) to the public health or welfare of the United States or the environment." 40 C.F.R. § 300.310(a)(emphasis added). Similarly, if "the discharge poses or may present a substantial threat to public health or welfare of the United States, the [EPA representative] shall direct all federal, state, or private actions to remove the discharge or to mitigate or prevent the threat of such a discharge, as appropriate." Id. § 300.322(b)(emphasis added).

Similarly, under RCRA section 7003(c)(emphasis added),

> Upon receipt of information that there is hazardous waste at any site which has presented an imminent and substantial endangerment to human health or the environment, the [EPA] Administrator *shall* provide immediate notice to the ap-

propriate local government agencies. In addition, the Administrator *shall* require notice of such endangerment to be promptly posted at the site where the waste is located.

Thus, it is not only EPA's moral obligation to assure that citizens potentially at risk from an oil or hazardous substance release are adequately warned and protected, but also the agency's legal obligation.

Unfortunately, EPA apparently has decided to "punt" to local authorities the responsibility to protect citizens' health in the wake of the massive Katrina-related oil and hazardous chemical releases. Generally, these local authorities do not have a significant staff of environmental health experts available, nor do they enjoy access to the array of expertise and scientific information that EPA has. They also are under enormous political pressure to allow rapid repopulation of the toxin-soaked areas.

EPA has repeatedly stated that it is not the agency's obligation to decide whether environmental conditions in New Orleans and other areas affected by toxins and oil pollution are so dangerous as to warrant continued quarantine or additional cleanup prior to general repopulation of the affected areas. Instead, EPA and FEMA say these decisions are a local responsibility. EPA has even refused to make an explicit public statement about whether it is safe for the public to return to New Orleans and other hard-hit areas. The agency has neither the legal nor the moral right to pass the buck in this way, particularly since local authorities are working under difficult conditions, with communication limitations, displaced staff and other unimaginable challenges.

Enormous Debris Disposal Operations, Including Proposals for Open Burning, Pose Huge Hazards

According to recent reports, an estimated 100 million cubic yards of debris have been generated by Katrina—enough to cover over 1,000 football fields 50-feet-deep with waste. This far exceeds the waste generated by any previous hurricane, and dwarfs the 1.5 million tons of debris from the World Trade Center attacks on 9/11.While some of this debris is merely downed trees or vegetation, much of it is destroyed housing, commercial buildings, 350,000 ruined vehicles, and a wide array of other detritus, much of which has been soaked by petroleum or other toxic chemicals, and much of which is intermixed with plastics and other materials that will become toxic if burned. Disposal of this material presents an enormous challenge with no easy answers.

Clearly, every effort must be made to recycle what can be salvaged. For example, "white goods" such as refrigerators, washers, dryers, air conditioners, etc., should, if possible, be recycled and any Freon removed. Steel and scrap metal from ruined vehicles and many destroyed structures also can be recycled. But clearly, there is not yet a disposal site for much of the rest of the waste. Reportedly, contracts for over a billion dollars for debris hauling and disposal have been issued.

The open burning of some debris has already begun, according to eyewitness accounts. In addition, state officials have begun to waive air pollution requirements and open burning bans. Much of the burning will occur in open pits with "air curtains," which have been advertised to control air emissions. Yet air curtains do not collect the air pollution—they blow air over the fire to improve oxygen flow and burning efficiency, but they do not collect the fumes or smoke. There are a few mobile incinerators with air pollution controls, but clearly these incinerators do not have adequate capacity to handle most of the debris.

We are deeply concerned about the public health impacts of widespread open burning of materials that are likely to generate large amounts of toxic gases and particulate matter. There are anecdotal reports that open burning of debris after previous hurricanes lead to increases in admissions to hospitals due to respiratory ailments. People whose health is already threatened by immediate exposure to toxins from spills and leaks and polluted water will only be put at greater risk.

Waste industry experts report that waste is being hauled to staging areas across Mississippi and Louisiana, and that Katrina waste disposal will occur not only in these states but also throughout the South. It is important that such disposal not add to the health threats and environmental injustices already suffered by many low-income and minority communities. For example, the Agriculture Street landfill in New Orleans, a controversial Superfund site that already threatened the health of a low income, predominantly African American community, received much of the waste from previous hurricanes, and was flooded after the recent levy breaks. As we plan the disposal strategy for wastes left by Katrina, we must consider the very real possibility that future storms will similarly inundate local disposal sites.

Ecological Impacts of Katrina and Rita

We are not only concerned about the enormous public health risks posed by Katrina and exacerbated by Rita, but also the ecological effects of these storms. The associated spills, storm surge, and floodwaters often have carried salt water and pollution into sensitive and ecologically important waters and marshes that serve as the nursery for many rare birds, as well as fish, shrimp, and other forms of life. Reports are beginning to trickle in that serious saltwater contamination of freshwater wetlands is widespread in the storm-ravaged areas. In addition, huge oil and hazardous substance spills are likely to add to the adverse impacts. It is important that recovery efforts address these problems, and that natural resource damage assessments are funded and completed to determine the extent of the harm.

Cleanup and Rebuilding Should Proceed With Strong Health Protections; Waivers of Environmental Laws Would Kick Hurricane Victims While They Are Down

New Orleans and the other storm-ravaged areas of Louisiana, Mississippi, and Alabama must be cleaned up and rebuilt to become healthy, thriving communities once again. Throughout this effort, cleanup standards and other health safeguards must be kept strong, to assure that people made vulnerable by the storm are not further threatened by inadequate cleanups or irresponsible reconstruction practices.

Accordingly, we and the local citizens with whom we have been in constant contact strongly oppose proposals to weaken cleanup or pollution standards—in the Gulf states or anywhere else in the country. Such an approach would kick these communities while they are down. It also would unnecessarily and unjustifiably threaten public health and the environment in other parts of the country. Already, there are several harmful bills introduced in Congress that would allow further harm to the health of the hurricane victims, while jeopardizing public health and environmental safeguards across the nation. While there may be the need for very limited, time-restricted waivers of certain requirements in consultation with the public, current law provides such authorities to EPA and often to state authorities. Sweeping waivers or weakening of current health and environmental protections are ill-advised and will only further hurt the victims of Katrina and Rita.

Local Citizens, Including Low-Income and Predominantly African-American Communities, Should Be Fully Informed and Integrated into Cleanup and Rebuilding Decisions

It is critically important that local citizens be fully informed about the risks they face, and that these citizens be included as full partners in cleanup and rebuilding decisions. Involvement of all communities, including the low-income and predominantly African American communities hardest hit by Katrina, is critically important to a successful rebuilding effort. The National Contingency Plan requires public disclosure of information and involvement in cleanup and response efforts, and many federal laws, such as RCRA and CERCLA, as well as the National Environmental Policy Act (NEPA), require public involvement in government decision making about environmental cleanup, waste disposal, or rebuilding efforts. Without this involvement, there will be widespread suspicion and anger from the very communities that the response actions and rebuilding are intended to help. Further disenfranchisement of already disenfranchised communities will seriously undermine the success of any government cleanup and rebuilding program.

AFTER KATRINA: NEW SOLUTIONS FOR SAFE COMMUNITIES AND A SECURE ENERGY FUTURE

NRDC recently published a report,

After Katrina: New Solutions for Safe Communities and a Secure Energy Future, which I am attaching to this testimony. This report addresses many of the reasons why past poor environmental policies made Katrina worse, and makes a series of recommendations for responding to the disaster, rebuilding better and safer communities, and developing a more responsible energy program that would reduce the threat that such catastrophic disasters pose to our energy supply and nation. Below, we summarize this report.

Katrina's Lessons

Hurricane Katrina exposed shocking holes in both our social fabric and our security safety net when she tore through the Gulf Coast. The storm also carried important lessons about management—or mismanagement—of essential health and environmental safeguards.

Hurricanes are a fact of life on the Gulf Coast, and, invariably, some turn deadly. But decisions made by policymakers and elected officials have tremendous influence

on our ability to absorb a storm's brute force. Their choices will also determine how quickly and how well communities cope with Katrina's environmental fallout, and whether low-income people of color will suffer as disproportionately in the aftermath as they did in the storm itself.

A century of poor planning and industrial abuse has stripped away much of the Gulf Coast's natural protection against storms and flooding. More than 1 million acres of coastal wetlands in Louisiana have been drained, lost to development, or starved of the Mississippi River sediments they need to survive.

These wetlands could have absorbed storm surge and floodwaters, substantially reducing the storm's impact. When the storm came ashore, it swamped aging, underfunded drinking water and sewage systems and hit more than 60 major industrial facilities and four Superfund waste sites hard in New Orleans alone, adding unknown toxins to the stinking, toxic flood.

Katrina caused nine oil spills totaling more than 7 million gallons, together ranking as one of the biggest U.S. spills in history. By contrast, the price shocks still rippling though the oil markets are not ultimately of Katrina's making. Rather they are due to soaring energy demand caused by years of official refusal to tackle our nation's energy dependence by diversifying our energy sources and improving fuel economy performance standards.

Fixing these problems will make Gulf Coast communities safer and more secure and reduce the longterm cost of coping with the disaster. Lessons from Katrina will pay dividends in other regions subject to extreme weather disasters as well.

Planning for a Change

The Natural Resources Defense Council (NRDC) has assembled a team of its best experts on public health, toxic waste, urban design, coastal protection, energy security, and global warming to present a set of policies and practices to protect the safety and well-being of Gulf Coast residents—today, during the recovery, and onward into a healthier, more sustainable future.

Protect Gulf Coast Communities from Toxic and Biological Hazards

The Environmental Protection Agency (EPA), the Centers for Disease Control and Prevention, and independent experts should immediately broaden toxicity testing of water, sediments, and soils, as well as biomonitoring and health surveillance of responders and the public. Immediate widespread testing of water, sediment, and dried mud is critical to ensuring the safety of cleanup workers and returning residents, and for identifying toxic hot spots for containment and cleanup. Big industrial facilities, Superfund sites, and other toxic hotspots should be catalogued and evaluated, and any dangerous releases contained immediately. Immediate public disclosure of all information is also critical.

Quickly Restore Safe, Clean Drinking Water Supplies

More than two weeks after Hurricane Katrina hit land on September 17, 2005, 186 public water treatment systems in Louisiana and 229 in Mississippi were seriously compromised, completely out of commission, or unaccounted for; and 172 sewage treatment plants were not fully functioning. Hundreds more in Louisiana, Mississippi, and Alabama were operational but expected to need repair or reconstruction. New Orleans' drinking water system was completely knocked out but has started pumping non-potable water in some areas for fire control.

All told, at least 2.4 million people were without access to safe drinking water and bacteria levels in floodwaters greatly exceeded public health standards shortly after Katrina. All these systems will need financial and technical assistance to get back into full, safe operation.

Restore Natural Coastal Buffers to Protect Against Storms

Natural coastal barriers on the Gulf have nearly been destroyed by decades of industrial misuse and government-sponsored re-engineering gone awry. We must adopt a major coastal wetland restoration program in the wake of Katrina to build back what we ourselves destroyed. It is also critical to ensure that flood control projects ordered by Congress and developed by the Army Corps of Engineers are prioritized to protect population centers and serve legitimate flood control purposes, not the call of pork-barrel politics.

Rebuild for a Safe, Secure, Sustainable Future

Now is a chance to restore New Orleans' 19th century elegance using today's know-how and technology. That means energy-efficient, weather-resistant housing designed according to voluntary federal standards that save money and improve comfort for people who live there, no matter what their income. And it means fam-

ily-friendly, mixed-use, mixed income walkable communities like many affected areas had in earlier days.

Maintain Health and Environmental Safeguards

Lobbyists and their congressional allies are already lining up hoping to undercut long-standing health and environmental safeguards in the name of hurricane recovery. In a few select cases, it may make sense to make temporary accommodations in federal health and environmental rules to address legitimate needs. But nearly all of these can be accommodated without changes in current law, much less the blanket suspension legal safeguard being proposed by special interests.

Repair the Racial and Economic Inequity of Health and Environmental Risk

Environmental injustices have long plagued New Orleans and the Gulf Coast region. Cleanup efforts should adhere firmly to the standing Federal Executive Order designed to ensure environmental justice for communities of low income and color that are exposed to inequitable amounts of toxic pollution. In the rebuilding process, local governments' exercise of eminent domain powers should not be used to take properties in low-income communities of color.

Permanently Protect American Consumers from Energy Price Spikes

In the wake of Katrina, oil and natural gas prices were skyrocketing. Although the worst of the panic induced run-up has abated, prices remain extremely high and experts are predicting a painfully expensive winter heating season. We cannot drill our way to energy security. The only real solution is to reduce the amount of energy we need to keep the economy humming. That means stronger fuel economy standards and rules requiring more efficient heating and air conditioning equipment and other energy conservation technologies.

Prevent the Added Threat of Global Warming

Global warming didn't cause Katrina. But experts agree the warming climate caused by heat-trapping pollution is adding fuel to tropical storms—elevating category 3 storms into category 4 and so forth. Hotter climate also means more flood risk due to rising sea levels. There is growing bipartisan support in Congress and many states for concrete, market-based limits on global warming pollution.

Mr. BASS. Thank you very much, Mr. Olson. Ms. Wright, Dr. Wright.

STATEMENT OF BEVERLY WRIGHT

Ms. WRIGHT. Thank you. Good morning, Mr. Chairman. Good morning, Mr. Chairman. I am Dr. Beverly Wright, Director of the Deep South Center for Environmental Justice at Dillard University in New Orleans, Louisiana, formerly at Xavier University. Regrettably, both of these historically black colleges are underwater now, and temporarily closed due to Hurricane Katrina. I have prepared a statement to present, taken from my testimony, but after listening to Mr. Olson, I decided that I would just, rather just give you some additional information that is of great concern to me and the people that I work with.

I am a lifelong resident of New Orleans, Louisiana, went away to school to New York, but always loved that city, and found my way back. Today, I find myself extremely distressed over what has happened to my city, and what has happened to my people. Some of you may be aware, and may be not, but the majority of the city, two thirds of that city, that has, in fact, been destroyed, where some of us believe we may be permanently displaced, were where African-Americans lived.

And there were two significant areas that were impacted, the Lower Ninth Ward, that you hear so much about, and what people may not know is that those person in the Lower Ninth Ward, though poor, were working poor, and they owned all of those

houses in that area, and have been there for many years, and it was a very strong voting population. The other part of the city that was destroyed is where I lived, and where everybody that I know and love lived, and that is Eastern New Orleans, which was made up of most of your black professionals, doctors, lawyers, teachers, and even those of us who had managed to become extremely wealthy. That particular part of the city has also been destroyed.

I hear all kinds of conversations about testing and people going back in, but no one is talking about New Orleans East or the Lower Ninth Ward, and just how devastated those areas are. The fact that we have been displaced will dramatically change the racial composition of that particular city, a city that I, where I can trace my ancestry back to Free Coloreds. Me and my family have lived there all my life, and never planned to leave. We have now been forced out.

One of the real concerns that I have is what is happening as it relates to persons going back into the city to try to recoup any or all of what they can of their lives. For example, my mother passed away in April. I was in the process of collecting all of her pictures from childhood, and those pictures have been destroyed completely. I have nothing left of her. So, when you hear people talk about wanting to go home, even when things are dangerous, you have to understand the emotions that go along with trying to get back to your house. I am concerned, because no one seems to be telling people how dangerous it is. The reports of the mold are unbelievable, reports of mold are unbelievable. I mean, they have completely consumed our homes, and it is now climbing upstairs. If you had a two story house, it is moving upstairs. It is covering every piece of furniture, and the mold is of every color that you can imagine. And of course, we are wondering about black mold.

People in New Orleans will be returning there on the 5th of September. I believe that is part of this supposed organized plan, I can tell you that plan is chaotic. There are meetings once a week at the City Capital and people are just turning up at those meetings in hundreds, trying to find out when they can get in, how they can get in, but no one is giving them any real scientific information about what the place is like. I am hearing words of people who are going in and then becoming extremely depressed, because they are going in expecting to see what they saw after Betsy, because as you know, people in New Orleans are kind of used to hurricanes and water rising, but this is not like anything that we have ever seen.

I am very concerned that people will become ill. People are taking out clothing covered with mold. They are finding back ways into the city. Any way that they can get in, they are going. We really and truly need to have some kind of Katrina survivor kit, or something that people are given before they go into the communities. I am told that they are given a handout. I have not seen it. Nobody has any information that I know. People that I know have nothing to warn them about what is going on, what the hazards are when they get there, or what they should do once they are inside.

There is almost terror in the eyes of so many people, when they, in fact, think about never returning home. Some kind of structured response needs to go forward, and African-Americans in the city of

New Orleans, those of us who have worked all our lives for what we have, and we have lost it, need to be told something. I am really begging the Environmental Protection Agency to do a better job than what it is doing. I have worked with EPA for years. I have fought with them, and fought with them. On this particular issue, I have to tell you I am very disappointed.

I hear words about Lake Pontchartrain. Well, you know, that is a really big lake, and so if a lot of nasty stuff flows into it, it may survive, but my house won't. And so, all of those chemicals that were going into a huge lake that is a lot of water, have also gone through my house, and I have nothing to wash it away. There is nothing to decrease the amounts of the contaminants in my house, or the houses of those people that I love.

I know I am forgetting something really important, because I am getting a little emotional, but I thank you for allowing me to speak. And this one last thing: I almost forgot. There are counties in Mississippi, and we have been getting calls from them, who have not received any help from the Red Cross or anybody. They have no electricity. They have no water. They have no ice. They have no food. And we are getting these calls, and people are trying to respond. We would like to know how we can advocate on their behalf, to make sure that these communities in Mississippi, rural communities, that are sitting way back someplace that most people don't know about, trees are down, wires are down, and they are really suffering.

Mississippi was hit very hard, just as Louisiana was, and so was Alabama. New Orleans was hit in a different kind of way, one that is really devastating for us, but all of the people of the Gulf Coast need to have better attention made, given to them, especially as it is related to them, their being able to return home.

Thank you.

[The prepared statement of Beverly Wright follows:]

PREPARED STATEMENT OF BEVERLY WRIGHT, DIRECTOR, DEEP SOUTH CENTER FOR ENVIRONMENTAL JUSTICE AND CO-CHAIR, NATIONAL BLACK ENVIRONMENTAL JUSTICE NETWORK

Good morning Mr. Chairman. I am Dr. Beverly Wright, Director of the Deep South Center on Environmental Justice at Dillard University, formerly at Xavier University. Regrettably, both of these Historically Black Colleges are underwater now and temporarily closed due to Hurricane Katrina. I am also here today representing the National Black Environmental Justice Network (NBEJN), which was founded in New Orleans, LA in December 1999. People of African descent in the United States organized ourselves in response to what we know is a State of Emergency in Black America.

NBEJN members founded the organization in New Orleans because we felt then, as now, that Louisiana and the Chemical Corridor between the City and Baton Rouge are under siege from and epitomize environmental and economic assaults. These assaults are costing Black people their very lives. NBEJN believes in the sacred value of every human life regardless of race, ethnicity, religion or socioeconomic status. We see in the tragedy of Hurricane Katrina, Hurricane Rita and the aftermath a unique opportunity to shape the conversation and dialogue about rebuilding of New Orleans and the Gulf Coast region with the goals of environmental and economic justice for everyone.

Thank you for the opportunity to testify before the Subcommittee on critical issues of concern in the aftermath of the hurricanes. My professional and personal experiences of growing up, living and working in the City of New Orleans greatly influence my perspective and testimony.

Who We Are

The Deep South Center for Environmental Justice (DSCEJ), at Dillard University in New Orleans, formerly at Xavier University of Louisiana, is now temporarily relocated in Baton Rouge, Louisiana.

The Deep South Center was launched in 1992 in collaboration with community environmental groups and other universities within the southern region to address environmental justice issues. DSCEJ provides opportunities for communities, scientific researchers, and decision makers to collaborate on programs and projects that promote the rights of all people to be free from environmental harm as it impacts health, jobs, housing, education, and general quality of life. A major goal of the Center is development of minority leadership in the areas of environmental, social, and economic justice along the Mississippi River Chemical Corridor. The Deep South Center for Environmental Justice is a powerful resource for environmental justice education and training.

DSCEJ has developed and embraces a model for community partnership that is called "communiversity." The essence of this approach is an acknowledgement that for effective research and policy-making, valuable community life experiences regarding environmental impacts must be integrated with the theoretical knowledge of academic educators and researchers. The Deep South Center for Environmental Justice has three components in terms of reaching our objectives: (1) research and policy studies, (2) community outreach assistance and education; and (3) primary, secondary, and university education.

Target Aea and Population Served

DSCEJ is national in scope with emphasis on the Mississippi River Chemical Corridor and Gulf Coast Region and global emphasis on communities impacted by the petrochemical industry. The major populations served include people of color with special concentration on African Americans and the African Diaspora, students and faculty at Historically Black Colleges And Universities/Minority Serving Institutions (HBCU/MSI) and public school teachers in urban areas. DSCEJ has forged collaborations with other major research institutions and governmental agencies that can assist in the development and implementation of the center's work.

Center Objectives

DSCEJ principal objectives include: (1) development of minority leadership in the field of environmental justice; (2) development of culturally sensitive training models for minority residents in at-risk communities; (3) development and distribution of culturally sensitive environmental justice education materials and training modules; (4) increasing environmental justice literacy among college students at HBCU/MSI's; (5) development of a pipeline creating a new generation of environmental justice leaders at HBCU/MSI's; (6) development and implementation of a K-12 teacher training program in environmental justice; (7) conducting research to determine the impact and extent of toxic exposure for minority communities as it affects health and the environment; (8) investigating means of addressing these problems (i.e., brownfields redevelopment, toxics use reduction, climate change, clean production and green chemistry, and economic development; and (9) creating linkages between impacted communities, scientific researchers, and government officials to address environmental justice issues as they impact health, jobs, housing, and overall quality of life.

Katrina Aftermath

As the floodwaters recede in New Orleans and the Gulf Coast region, it is clear that the lethargic and inept emergency response immediately following this devastating storm was the real disaster that nearly overshadowed the actual storm. We were all left nearly paralyzed in front of our television sets completely unable to continue with our daily lives watching the unbelievable events unfold right before our eyes. Americans were shocked beyond belief that this could happen in America, to Americans. It also raised lingering questions and doubts about our overall security. Is government equipped to plan for, militate against, respond to, and recover from natural and manmade disasters? Can the public trust government's response to be fair? Does race matter?

Examination of historical data reveals that emergency response reflects the preexisting socioeconomic and political structures of a disaster area and is based on race and class differentials. Generally communities of color receive less priority in response time than do their white counterparts where emergency response is required.

Before Hurricane Katrina—Pre Existing Vuknerabilities

Katrina struck a region that is disproportionately African American and poor. For example African Americans make up twelve percent of the United States population. New Orleans is nearly 68 percent black. The African American population in the Coastal Mississippi counties where Katrina struck ranged from 25 percent to 87 percent black. Some 28 percent of New Orleans residents live below the poverty level and more than 80 percent of those are black. 50 percent of all New Orleans children live in poverty. The poverty rate was 17.7 percent in Gulfport, Ms. And 21.2 percent in Mobile, Al. in 2000. Nationally, 11.3 percent of Americans and 22.1 percent of African Americans live below the poverty line in 2000.

New Orleans is prototypical of environmental justice issues in the Gulf Coast region. Before Katrina, the City of New Orleans was struggling with a wide range of environmental justice issues and concerns. Its location along the Mississippi River Chemical Corridor increased its vulnerability to environmental threats. The City had an extremely high childhood environmental lead poisoning problem. There were ongoing air quality impacts and resulting high asthma and respiratory disease rates and frequent visits to emergency rooms for treatment by both children and adults. Environmental health problems and issues related to environmental exposure was a grave issue of concern for New Orleans residents.

The African American community in New Orleans was already grappling with the nationally identified health disparities for minorities reported by the National Institutes of Health (NIH). These conditions were exacerbated by environmental conditions triggering asthma and exposing children to lead. High blood pressure, diabetes and cancer were also prevalent in the African American community.

Displacement Post Katrina

Residents in the Gulf Coast region fled the hurricane zone. More than a million Louisiana residents fled Hurricane Katrina. An estimated 100,000 to 300,000 Louisiana residents alone could end up permanently displaced. Nearly 100,000 Katrina evacuees are in 1,042 shelters scattered in 26 states and the District of Columbia. Katrina has left environmental contamination in Gulf Coast neighborhoods that will have to be cleaned up before residents can move back. An estimated 150,000 houses may be lost as a result of standing in water from Katrina. We are still grappling with understanding the full impacts of both Hurricanes Katrina and Rita.

Thousands of hurricane survivors along the Gulf Coast must now cope with the loss of relatives and friends, homes, and businesses and, what we term, loss of community. Katrina displaced just under 350,000 school children in the Gulf Coast. An estimated 187,000 school children have been displaced in Louisiana, 160,000 in Mississippi and 3,118 in Alabama. Katrina closed the entire New Orleans school system indefinitely. One hundred and twenty-five thousand New Orleans children alone are attending schools elsewhere. Over 93 percent of New Orleans schools students are African American. Evacuees' children are being enrolled in schools from Arizona to Pennsylvania, including almost 19,000 who will be attending schools in Texas.

For the survivors who lost everything, it involves coping with the stress of starting all over. Two weeks after Katrina struck, more than 2,500 children were still separated from their families. One can only imagine the mental anguish these families are going through. On the heels of this disaster, Hurricane Rita struck the coastal areas again.

Environmental Damage

New Orleans and outlying areas suffered severe environmental damage during Katrina, the extent to which has yet to be determined. The post-Katrina New Orleans has been described as a "cesspool" of toxic chemicals, human waste, decomposing flesh and surprises that remain to be uncovered in the sediments. Massive amounts of toxic chemicals were used and stored along the Gulf Coast before the storm. Literally thousands of sites in the storms path used or stored hazardous chemicals, from the local dry cleaner and auto repair shops to Superfund sites and oil refineries in Chalmette and Meraux, La, where there are enormous stores of ultra-hazardous hydrofluoric acid. In the aftermath of the storm some sites were damaged and leaked. Residents across the Gulf Coast and the media reported, "oil spills, obvious leaks from plants, storage tankards turned on end and massive fumes."

Short-term rebuilding objectives must not outweigh long-term public health protection for all Americans and the environment they depend upon. Some of the legislative proposals now under consideration in the aftermath of Katrina do not adhere to this principle. Congress must act now to protect our most vulnerable populations and preserve our most unique and irreplaceable resources. It is imperative that Congress responds quickly and effectively to the devastating aftermath of Hurri-

canes Katrina and Rita. It is also important, to temper our haste to rebuild with balance in our response to ensure appropriate respect for public health and the environment. Moreover, the public has a right to clean air and water and it must be protected.

There is much speculation about what the new New Orleans will look like: whether the Mississippi Gulf Coast should now consider land-based Casinos versus riverboats; the social economic and political structure of "New" New Orleans; rebuilding a green and sustainable Gulf Coast region that embraces innovative green building technologies and principles; construction of a levee system that will protect New Orleans; and development of environmentally and economically sustainable communities must all be explored simultaneously. None of these concepts are relevant unless the cleanup in the region is properly conducted and completed. This conclusion is not based on speculation. The community of Agriculture Street Landfill in the City of New Orleans has lived the nightmare of discovering that their homes were built on top of a landfill that was reopened to dispose of the tons of debris resulting from Hurricane Betsy.

Hurricane Betsy—New Orleans, Louisiana

Hurricane Betsy struck the State of Louisiana and the City of New Orleans in 1965. Betsy was then the "most destructive hurricane on record to strike the Louisiana coast."[1] The damage and flooding throughout the State covered 4,800 square miles, killed 81 persons, caused the evacuation of 250,000 persons, and disrupted transportation, communication, and utilities services throughout the eastern coastal area of Louisiana for weeks. Betsy hit the mostly Black and poor New Orleans Lower Ninth Ward especially hard. This is the same neighborhood that was inundated by floodwaters from Katrina and then suffered the indignity of a second flooding by Rita. Over 98 percent of the Lower Ninth Ward residents are Black and a third live below the poverty level.

Many Black New Orleans residents still believe that white officials intentionally broke the levee and flooded the Lower Ninth Ward to save mostly white neighborhoods and white business districts. In 1965, a disproportionately large share of Lower Ninth Ward residents did not receive adequate post-disaster financial assistance in the form of loans and other support to revitalize the area. Betsy accelerated the decline of the neighborhood and out-migration of many of its longtime residents. Debris from Betsy was buried in the Agricultural Street Landfill—located in a predominately Black New Orleans neighborhood. Over 390 homes were built on the northern portion of the site from 1976-1986. The Agricultural Street Landfill neighborhood was added to the National Priorities List as a Superfund site in 1994.[2]

New Orleans Agriculture Street Landfill Community

Dozens of toxic time bombs along Louisiana's Mississippi River petrochemical corridor, the 85-mile stretch from Baton Rouge to New Orleans, make the region a major environmental justice battleground. The corridor is commonly referred to as Cancer Alley. Black communities all along the corridor have been fighting against environmental racism and demanding relocation to areas away from polluting facilities.[3]

Two largely Black New Orleans subdivisions, Gordon Plaza and Press Park, have special significance in terms of environmental justice and emergency response. Both subdivisions are built on a portion of land that was used as a municipal landfill for more than 50 years. The Agriculture Street Landfill, covering approximately 190 acres, was used as a city dump as early as 1910. Municipal records indicate that after 1950, the landfill was mostly used to discard large solid objects, including trees and lumber, and it was a major source for dumping debris from the very destructive 1965 Hurricane Betsy. It is important to note that the landfill was classified as a solid waste site and not a hazardous waste site.

In 1969, the federal government created a home ownership program to encourage lower income families to purchase their first home. Press Park was the first subsidized housing project of this program in New Orleans. The federal program allowed tenants to apply 30 percent of their monthly rental payments toward the purchase of a family home. In 1987, seventeen years later, the first sale was completed.

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[1] Craig E. Colten and John Welch. "Hurricane Betsy and Its Effects on the Architecture Integrity of the Bywater Neighborhood: Summary." May 2003.

[2] See Agency for Toxic Substances and Disease Registry, *Public Health Assessment—Agriculture Street Landfill, New Orleans, Orleans Parish, Louisiana,* Atlanta, GA: ATSDR (June, 1999); Alicia Lyttle, *Agriculture Street Landfill Environmental Justice Case Study,* University of Michigan School of Natural Resources, Ann Arbor, Michigan (January 2003).

[3] Robert D. Bullard, *The Quest For Environmental Justice: Human Rights and the Politics of Pollution* (San Francisco: Sierra Club Books, 2005.

In 1977, construction began on a second subdivision, Gordon Plaza. This development was planned, controlled, and constructed by the U.S. Department of Housing and Urban Development (HUD) and the Housing Authority of New Orleans (HANO). Gordon Plaza consists of approximately 67 single-family homes.

In 1983, a portion of the Agriculture Street Landfill site was purchased by the Orleans Parish School Board as a site for a school. The fact that this site had previously been used as a municipal dump prompted concerns about the suitability of the site for a school. The school board contracted engineering firms to survey the site and assess it for contamination and hazardous materials. Heavy metals and organics were detected.

Despite the warnings, Moton Elementary School, an $8 million state-of-the-art public school opened with 421 students in 1989. In May 1986, EPA performed a site inspection (SI) in the Agriculture Street Landfill community. Although lead, zinc, mercury, cadmium, and arsenic were found at the site, based on the Hazard Ranking System (HRS) model used at that time, the score of 3 was not high enough to place them on the National Priority List (NPL).

On December 14, 1990, EPA published a revised HRS model in response to the Superfund Amendments and Reauthorization Act (SARA) of 1986. At the request of community leaders, in September 1993, an Expanded Site Inspection (ESI) was conducted. On December 16, 1994, the Agriculture Street Landfill community was placed on the NPL with a new score of 50.

The Agriculture Street Landfill community was home to approximately 900 African American residents. The average family income is $25,000 and the educational level is high school graduate and above. The community pushed for a buy-out of their property and to be relocated. However, this was not the resolution of choice by EPA. A cleanup was ordered at a cost of $20 million, the community buy-out would have cost only $14 million. The actual cleanup began in 1998 and was completed in 2001.[4]

The Concerned Citizens of Agriculture Street Landfill filed a class action suit against the City of New Orleans for damages and relocation costs. It took nine years to bring this case to court.[5] The case was still pending before Katrina struck. It is ironic that the environmental damage wrought by Katrina may force the cleanup and relocation of the Agriculture Street Landfill community. But nothing can give them back their health and well being, or replace the family members and friends who might still be with them were it not for the health effects of living on a landfill.

Have we learned anything over the last 40 years, since Hurricane Betsy struck, that should guide our decisions after Hurricanes Katrina and Rita? Much of the proposed legislation concerning rebuilding the Gulf Coast region strongly suggests that we have not. In fact, it seems that some are using the crisis of Hurricane Katrina to advance their political and policy agenda, including **weakening, waiving and rolling back public health, environmental justice and environmental laws and regulations.**

It is ironic that the tragedy of Hurricane Katrina is being used to justify sweeping waivers of public health, safety and environmental laws. S. 1711 would confer on the U.S. Environmental Protection Agency (EPA) sole and absolute authority to waive federal or state laws anywhere in the country for up to one and a half years. In addition, the waiver authority would extend well beyond environmental laws. EPA need only claim such waiver is in the public interest and is somehow linked to Hurricane Katrina. The Agency need not demonstrate that waivers are required to protect public health and safety, and there is no requirement that EPA provide any public health protection in exchange for granting waivers.

Foremost, Senate Bill 1711 and other legislation of this ilk threatens the most vulnerable communities in the Gulf Coast, and those living in the shadows of oil refineries, by authorizing the elimination of protection that ensures that residents have clean water to drink, clean air to breathe, and the right to live in a toxic-free community. With the hurricane devastation disproportionately hurting poor and minority residents already, this bill adds insult to injury by allowing private industry to operate above the law and risks more suffering on the part of people most affected by the hurricane. **Remember the lessons of Betsy and remember the Agriculture Street Landfill community.**

EPA Administrator Stephen Johnson told Congress on September 13, 2005 that the Agency has all the authority needed under existing law to respond to Hurricane

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[4] Alcia Lyttle, "Agricultural Street Landfill Environmental Justice Case Study," University of Michigan School of Natural Resource and Environment found at http://www.umich.edu/snre492/Jones/agstreet.htm. (Accessed on October 6, 2004).

[5] Robert D. Bullard, *The Quest For Environmental Justice: Human Rights and the Politics of Pollution.*

Katrina and has already used that authority to relax some environmental programs. Granting EPA unlimited waiver authority and opening the door to risking the health and safety of millions of Americans is not the way to help Gulf Coast states recover from Hurricane Katrina.

According to EPA tests, the biological threats from the flood include elevated levels of E coli bacteria and toxic mold. Contamination from industrial facilities pose a more troubling long-term concern with more than 40 oil spills recently reported in Louisiana by the Coast Guard and thousands of chemical containers spotted bubbling in the region's flood water. The oozing sediments that coat flood impacted areas may yield an even greater danger in the coming months as the ground dries, releasing airborne contaminants like harmful organic gases such as the highly toxic methane and fuel vapors. The potential health effects range from allergic reaction to organic damage.

The U.S. Environmental Protection Agency has released test results for toxic chemicals in floodwaters for less than 30 sampling sites, all in downtown New Orleans, far from hot spots in outlying areas. Even these "limited results were weeks old despite" ever-increasing numbers of clean-up crews and residents pouring into surrounding parishes. EPA's Response to Katrina web page indicates only a "few hazardous" chemicals having been found in quantities over their acceptable limits none of which present a substantial risk to the public.

Also, risk to human health posed by hazardous chemicals likely to be present in flood-ravaged areas is conspicuously absent from publicly available information. EPA's website provides no information that would help someone identify symptoms of potentially life threatening or debilitating exposures to hazardous chemicals as they do for bacterial contaminant exposures such as E coli.

In closing, and speaking as a life long resident of the City of New Orleans, for the last fifteen years, I have fought for a better quality of life for New Orleans citizens and those living along the Mississippi River Chemical Corridor, infamously known as Cancer Alley. I have worked with government to ensure environmental protection for communities. I have fought against environmental racism and for environmental justice for all, and I am greatly concerned about what I have seen in response to Katrina. What local communities in the Gulf coast region need now from government agencies is the truth even if it hurts. **Please level with the American people** before we return to our homes or send our children back to school, so that we can make the best possible choices under these circumstances.

The right thing to do is to **expand chemical testing, provide more timely and forthcoming test results, and engage stakeholders,** especially those from the impacted region. Under this approach, EPA and other government agencies might be successful this time in carrying out their charge of protecting the public. If Katrina has taught us nothing else, it has shown us how essential access to information is to our ability to deal with crises. By not being forthcoming with information and not providing transparency in the process, agencies endanger American lives and further tarnish their own credibility.

In the wake of Katrina, there should be:

- Timely and accurate information about risk and a coherent plan to address hazards;
- EPA and Congress should provide enhanced air and water quality monitoring to both inform the clean-up process and to give confidence to citizens and businesses returning and rebuilding New Orleans and the Gulf Coast;
- Citizens should know that their health is being protected by EPA and government agencies; and
- Citizens should be given clear and accurate instruction on procedures for reentering the City and other areas in the Gulf Coast region to protect their health.

I have attached for your consideration a Resolution issued by the National Black Environmental Justice Network which outlines the full range of issues and recommendations that should be addressed in this post-hurricane cleanup and rebuilding process. We urge Congress to oversee federal agencies responding to the hurricanes in terms of: (1) prohibiting discrimination based on race, income, religion and national origin; (2) compliance with the Executive Order 12898 on Environmental Justice; and (3) compliance with Title VI of the 1964 Civil Rights Act which, in general, prohibits discrimination in programs funded by federal dollars.

Finally, I to draw your attention to the many vulnerable communities of color that exist in the shadow of chemical and petro chemical facilities along the Alabama, Mississippi, Louisiana, and Texas Gulf Coast, who are especially in harms way at this time. Don't forget those places in assessing the devastating impacts of both Hurricanes Katrina and Rita. Too much focus is on the structural integrity of chemical plants, oil refineries, and oil rigs and insufficient attention is focused on the devastating impact that communities have suffered as a result of proximity to these

facilities. These people may never be able to return to their homes. These communities warrant our attention, our resources, and the full efforts of all branches of government to ensure their survival and protection in the future.

NATIONAL BLACK ENVIRONMENTAL JUSTICE NETWORK

RESOLUTION ON ENVIRONMENTAL AND ECONOMIC JUSTICE IN THE GULF COAST REGION ENVIRONMENTAL CLEANUP, RESTORATION AND REBUILDING SUSTAINABLE COMMUNITIES POST-HURRICANE KATRINA AND BEYOND©

The National Black Environmental Justice Network (NBEJN) was founded in New Orleans, Louisiana in December 1999 in response to a State of Emergency in Black America. New Orleans was selected as the ideal location to launch NBEJN since the City of New Orleans, Louisiana and the Chemical Corridor, encompassing the area up to Baton Rouge, are under siege due to wide ranging environmental and economic assaults. These assaults are costing Black lives.

NBEJN values as sacred every human life regardless of race, ethnicity, religion or socio-economic status. We view the tragedy of Hurricane Katrina and its aftermath as a unique opportunity to shape the conversation and dialogue about rebuilding the Gulf Coast region including Gulf Coast states and Greater New Orleans in ways that provide environmental and economic justice for the entire affected population.

WHEREAS, race and class intersected with the Katrina disaster in ways that compound the impacts on Black communities and issues of race and class will affect environmental cleanup and restoration, public and environmental health, regional equity, community development and economic recovery;

WHEREAS, NBEJN is committed to alleviating and remedying the impacts of Hurricane Katrina on Black families, in particular, environmental, public health and economic consequences of the storm and its aftermath on the health and well being of survivors;

WHEREAS, the NBEJN post-hurricane focus centers on research, policy development and education advocacy, communications and media, outreach and networking in the areas of environmental justice; economic justice; environmental health; protection of public health; regional equity, sustainable development; cultural preservation; climate justice; homeland insecurity; and emergency responses;

WHEREAS, NBEJN and its members will monitor hearings and investigations convened by Congress, state legislatures and governmental agencies about Hurricane Katrina to ensure that the environmental and economic justice aspects of the disaster are prominent;

WHEREAS, there are urgent needs in hundreds of Black communities throughout the Gulf Coast region in terms of moving forward on environmental cleanup, habitability, restoration and rebuilding those areas devastated and/or destroyed by Hurricane Katrina and the Lake Pontchatrain levee breaches;

WHEREAS, worker safety and health and public safety and health and public security are essential;

WHEREAS, concern about homeland insecurity among African American communities pre-dates Hurricane Katrina and these communities are uniquely affected due to their close proximity to petrochemical and chemical plants and other environmentally harmful facilities;

WHEREAS, all local, state and regional emergency preparedness plans must be designed to address the needs of people with low-incomes who don't have resources to evacuate themselves and their families in the event of natural and other disasters;

WHEREAS, there must be a governmental inventory, assessment of and response to the impacts of Hurricane Katrina on potentially hazardous permitted and non-permitted operations including treatment, storage and disposal facilities, Superfund sites, chemical weapons stockpiles, pesticide and chemical storage facilities, refineries and manufacturing plants, and other existing and potential environmental hazards in the Gulf Coast region;

WHEREAS, local zoning ordinances must be promulgated to prohibit siting, permitting and operation of heavy industrial facilities adjacent to, in or near residential areas,

WHEREAS, there must be continuous testing and monitoring of drinking water and water quality in and around Greater New Orleans and the Gulf Coast region and testing must occur short- medium- and long-term;

WHEREAS, global warming and climate change have dire health and environmental consequences in vulnerable African-American communities in the Gulf Coast region and elsewhere;

WHEREAS, wetlands preservation, restoration and erosion control must be accelerated to protect the Gulf Coast Region and in the Mississippi River chemical corridor;

WHEREAS, in consultation with affected communities, the U.S. Army Corps of Engineers and engineering experts should be delegated the responsibility of designing, constructing and maintaining a better, more effective system of levees, improved drainage, and rerouting of the flood control systems that continually inundate the lower 9th Ward community;

WHEREAS, the U.S. Congress, the U.S. Department of Homeland Security, the U.S. Department of Defense, U.S. Department of Interior and the U.S. Environmental Protection Agency should ensure that these re-engineering, wetlands preservation and restoration, and flood prevention and drainage efforts are fully funded;

WHEREAS, expediency in the aftermath of Hurricane Katrina cannot be a pretext to weaken or waive environmental authorities in the Gulf Coast region or elsewhere in the United States including all existing local, state, regional and federal environmental laws and regulations;

WHEREAS, environmental cleanups must be conducted fairly and equitably in every affected community including decisions about areas wherein the most stringent cleanup levels will be applied during restoration, redevelopment and rebuilding;

WHEREAS, the Federal Emergency Management Agency (FEMA) and the U.S. Department of Homeland Security must comply with Executive Order 12898 on Environmental Justice including immediate action on new disaster preparedness models that address the needs and challenges of the lowest income person in every community;

WHEREAS, fair and equitable access to and distribution of resources is paramount in all post-hurricane operations and activities, minority businesses in the environmental, community development and construction sectors must be utilized in the short- medium- and long-term cleanup and rebuilding efforts;

WHEREAS, there must be a public process to develop a broad, socially and equitably just vision for a new, revitalized Gulf Coast region and Greater New Orleans, encompassing prominent roles for poor, low and moderate income African-Americans in designing and implementing the vision and the rebuilding plans;

WHEREAS, economic parity is a cardinal objective in a revitalized and renewed Gulf Coast region and Greater New Orleans, cultural preservation, poverty alleviation and sustainable development are highly valued, central facets of every revitalization strategy;

WHEREAS, local jurisdictions in the Gulf Coast region must not use eminent domain in the rebuilding process in ways that result in taking of properties in Black communities in order to convert them to public or other uses;

WHEREAS, redevelopment and revitalization plans and rebuilding infrastructure must benefit those communities most affected by the hurricane, these efforts cannot exacerbate gentrification in ways that result in more residential and commercial displacement for Black people, many or whom are poor;

WHEREAS, rebuilding activities in the Gulf Coast region must first deploy local businesses and hire local Black workers and local low-income workers to participate in the rebuilding efforts;

WHEREAS, jurisdictions in the Gulf Coast region must focus on creating sustainable low and moderate income housing (concentrating on historic and cultural preservation), and address the fair housing issues embedded in the temporary and long-term resettlement of surviving evacuated Black families;

WHEREAS, the private sector must exercise caution in real estate and business financing and property-casualty insurance practices to prevent insurance and lender redlining and price-gouging and to ensure that insurance claims are paid fairly and equitably;

WHEREAS, local, state, regional and federal government agencies must exercise oversight to ensure that post-hurricane insurance and banking practices are fair and equitable;

WHEREAS, continuing the education of the young survivors of the hurricane, children and youth, must be a priority at the levels of pre-kindergarten, elementary, high school, secondary and post secondary education;

WHEREAS, full employment, job placement, job training and worker re-training programs are key to restoring the lives of Gulf Coast survivors and achieving economic justice;

WHEREAS, a Reparations And Victims Compensation Fund should be established to benefit all persons displaced by Hurricane Katrina and African-Americans should receive just and equitable compensation from such a fund;

WHEREAS, special outreach efforts must address and assist undocumented persons and other immigrants in a time of disaster including those who don't speak English;

THEREFORE BE IT RESOLVED that the National Black Environmental Justice Network (NBEJN) is committed to rebuilding the Gulf Coast Region including Greater New Orleans in collaboration with stakeholders, local, state, regional and federal elected officials, governmental agency officials and other entities in the public and private sectors;

BE IT FURTHER RESOLVED that the National Black Environmental Justice Network calls on stakeholders, local, state, regional and federal elected officials, governmental agency officials and other entities in the public and private sectors to adopt environmental and economic justice principles and approaches in the Gulf Coast Region cleanup, restoration and rebuilding efforts; and

BE IT FURTHER RESOLVED that all federal and state efforts should comply with Title VI of the 1964 Civil Rights Act, the Executive Order 12898 on Environmental Justice, and United Nations directives on displaced persons.

Mr. BASS. Thank you, Dr. Wright. Mr. Verchick.

STATEMENT OF ROBERT R.M. VERCHICK

Mr. VERCHICK. Thank you, Mr. Chairman, and members of the subcommittee. Thank you for the opportunity to be here today. I testify as an expert in environmental law and policy, a resident of New Orleans, and a board member of the Center for Progressive Reform.

Last week, or rather, earlier this week, the Center released a 56 page report titled "An Unnatural Disaster: The Aftermath of Katrina," along with a separate report on the Army Corps' proposed barrier project, which was talked about earlier in the first panel. I ask that both of these reports, along with my oral testimony today, be entered into the Congressional Record.

I am an evacuee, like Dr. Wright, and lost part of my house. I am teaching in Houston now, my family is in Washington State, and I am hoping to return in January. I have three young boys, and I am not sure they will be able to. And part of that is what is motivating me to be here today.

The first thing I would like to do is talk about something that occurred in the panel just before, because as a law professor, I am especially sensitive to legal inaccuracies, and I want to just make one thing perfectly clear. It is, I think, false to suggest, in terms of the Army Corps' sea gate barrier project, it is false to suggest that a small, grassroots organization in the 1970's overturned the will of the Department of Defense and the Army Corps of Engineers. I want to explain exactly, as a legal matter, what happened about that. It involved a 1977 lawsuit against the Army Corps of Engineers, in a proposal to build a sea gate. They were required, the Army Corps was, to have an environmental impact statement. Their impact statement was based on models 10 years old. All of its biological analysis was based exclusively on a phone call with a single marine biologist, and the Corps' chief engineer himself wanted more information about the sea gates and the models. Based on this information, a court in 1977 struck the EIS, the environmental impact statement, and invited the Corps to update the hydrological models so that the plan could move forward. Then, instead of fixing the EIS, the Corps in the 1980's, under a different Administration, dropped the barrier plan entirely in favor of an upgraded levee plan because, among other reasons, it was, and this

is according to the GAO, it was: "It would cost less to do the levee system instead." I simply want to make the point that whether or not you favor sea gates, one has to understand that the decision about sea gates belonged to the Army Corps of Engineers and no one else. And if Congress is interested in more sea gate technology, it should know that the Army Corps last year, in fact, has another sea gate proposal, that it is working on planning, and it may or may not be something that the Congress wants to fund. But I simply want to point that out.

I want to move on now to what I originally planned on talking about, which is points having to do with the toxins, and I have three points that I want to make. One, the environmental contamination left in the wake of Katrina is extremely serious. It must be investigated thoroughly, and remedied adequately before people are allowed to occupy the city again.

My second point is that to have credibility, and to accomplish this difficult task, the investigation must ask questions that are conducted by an independent, bipartisan taskforce, similar to the September 11 commission.

And third, now is not the time to repeal, roll back, waive, any of our crucial environmental laws, as some members of regulatory industries have suggested. This is not a time for anti-regulatory profiteering at Louisiana's expense. We need the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, RCRA, Superfund, and so on, and we need them funded. The problem with the floods has something to do with the fact that a lot of the controlled industries in that area did not adequately have charge of the contaminants to begin with. To talk just a little bit about the contaminants, in the small time that I have left, I want to just point out a few things. There is no way for anyone to know if the risk is tolerable or safe at this point. I know this, because Dr. Falk and Mr. Peacock said as much. In fact, there has been little or no testing on long-term contaminants, so it doesn't do any good to say the mayor and the Governor and Mr. Allen will get together and decide if it is safe. They can't, because we don't have the information yet, and until we have that information, with a city that had a population of a quarter disabled, we should not bring those people back into the city, when there is no information.

I have been there. I have unloaded basements, helped my neighbors. Nobody knows anything about what is going on. No one has the gear. A lot of people can't afford the gear. You go to Wal-Marts up and down the state, you won't find rubber boots and rubber gloves. There is no way to do it. My time is up, but I simply want to reinforce the idea that I desperately, along with many others, want to go back to my city with my children, and I have no idea whether it is safe or not, because the government has no idea whether it is safe or not, and they owe that explanation to the people before they allow or encourage people to move into the city of New Orleans.

Thank you.

[The prepared statement of Robert R.M. Verchick follows:]

PREPARED STATEMENT OF ROBERT R.M. VERCHICK, GAUTHIER-ST. MARTIN EMINENT SCHOLAR CHAIR IN ENVIRONMENTAL LAW, LOYOLA UNIVERSITY NEW ORLEANS

Mr. Chairman and members of the Subcommittee, thank you for the opportunity to appear before you today to testify on Hurricane Katrina, its historic roots, and its current status. I testify today as an expert in environmental law and policy and a resident of New Orleans.

As you know, I am an evacuee. My wife and children are living this fall in the state of Washington, and I have taken up temporary residence in Houston, Texas, where my Law School, Loyola New Orleans, is about to begin its fall semester in space donated by the University of Houston. Several days ago, I was lucky enough to be able to return to New Orleans to check on our house (partially flooded, but remarkably intact) and my university's campus (now partially occupied by the National Guard). I do not know when my family or I will be able to return, nor do I know for certain when the Law School will be able to resume its mission in its own building.

Like most New Orleans evacuees, my heart and my mind remain with the City. I monitor the worldwide Web constantly, I speak on the phone or e-mail with people who have remained in the area several times a week, and I regularly read the local blogs, including those associated with my city's newspaper, television stations, and schools. This is a tragedy that will stay with my family and me for quite a long time and, it now appears, with the country.

My testimony today focuses on the environmental ramifications of Katrina that involve the dispersal of toxic chemicals throughout the environment. Although I understand you want and need a briefing on conditions as they stand today, I am also going to trace some of the history of how we ended up in this mess. Mother Nature is overwhelmingly powerful, to be sure, but we made mistakes that rendered the situation much worse, and that must be corrected before we rebuild the city. My message today boils down to three points:

One. The environmental contamination left in the wake of Katrina is very serious and must be investigated thoroughly and remedied adequately *before* people are allowed back into affected areas of New Orleans. We cannot afford to repeat the mistakes of the past, many of which were rooted in the policies of neglect and racial and economic discrimination that were on full display in the immediate aftermath of the hurricane.

Two. To have credibility and to accomplish this difficult task, the investigation must ask the right questions and be conducted by an independent, bipartisan taskforce modeled along the lines of the September 11 Commission. A major goal of my testimony is to suggest the critical questions such an investigation must address.

Three. Now is not the time to repeal, roll back, or waive any of our crucial environmental laws, as some opportunistic members of regulated industries have suggested. We need the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, the Resource Conservation and Recovery Act, and the Superfund law more than ever to make sure that people and natural resources are safe as New Orleans is rebuilt.

Katrina's Environmental Aftermath

Katrina left nine categories of environmental problems in her wake:

1. flooded and contaminated drinking water supplies;
2. several oil spills, typically from above-ground tanks;
3. leaking underground tanks containing fuel and other chemicals;
4. flooded sewage treatment plants;
5. flooded buildings, lagoons, lots, and individual containers containing a wide array of toxic chemicals that were washed out into the ambient environment;
6. the concentrated residue of many fires spread into the environment;
7. building debris that is cultivating harmful molds;
8. contaminated sediment and other sludge throughout the city; and
9. toxic exposure of cleanup and other workers as a result of this pollution.

On September 19, 2005, EPA estimated that in Louisiana, 498 of 683 drinking water facilities are operational and meeting EPA standards; 26 are operating on a "boil water notice"; and 159 are either inoperable or their status is unknown.[1] Together, the 683 facilities serve 2.5 million people. In Mississippi, 1,073 of the 1,368 drinking water systems are operational; 231 are operating on a boil water notice;

[1] All of the figures in this paragraph were reported in EPA, Response to Hurricane Katrina Update (Sept. 19, 2005), *available at* http://www.epa.gov/katrina/activities.html#sep13 [hereinafter EPA, RESPONSE KATRINA].

and 64 are either inoperable or their status is unknown. The 1,368 systems serve 3.2 million people. In Alabama, 72 drinking water systems serve approximately 960,000 people. Seventy-one are operational, and one is operating on a boil water notice.

EPA estimates that there were five major oil spills in the New Orleans area to date;[2] one newspaper reported that six spills had occurred.[3] The Coast Guard has estimated that the spills involved 160,000 barrels, and that it has recovered 50,000 barrels to date (a barrel holds 42 gallons).[4] Additional petroleum contamination has resulted from the flooding of an estimated 350,000 vehicles. The Louisiana Department of Environmental Quality reported that oil storage tanks located near the Mississippi River, with a combined capacity of two million barrels, appeared to be leaking.[5] The Coast Guard has estimated that more than seven million gallons of oil may have been spilled from industrial plants, storage depots, and other facilities in southeastern Louisiana as a result of Katrina.[6] These spills have caused as-yet unclear damage to the Gulf and the River.

As for the floodwaters that swept New Orleans and coastal communities in Mississippi and Alabama, the most immediate threat to human health is biological contamination.[7] Experts have likened the bacterial concentrations in the floodwaters to untreated sewage.[8] EPA also stated on September 19, 2005 that E. coli levels in flood waters are "greatly elevated" and remain "much higher" than EPA's recommended levels for contact. Those exposed to the bacteria-laden floodwaters could contract diseases such as hepatitis-A and salmonella poisoning.[9] Intestinal diseases can be transmitted by ingesting sewage or simply by being in the water without adequate protective clothing.[10] These risks are particularly acute for children, the elderly, or those with compromised immune systems.

The bacterial contamination that creates these risks of infectious disease resulted in part from damage to sewage treatment plants located in the three states most directly affected by the storm, hundreds of which were damaged or rendered inoperable. Leaking sewage lines added to the problem.[11] The decomposition of dead people and animals contributed still further bacterial contamination to the floodwaters.

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[2] *Id.*

[3] Marla Cone and Ashley Powers, *EPA Warns Muck Left by Floodwaters Is Highly Contaminated,* L.A. TIMES, Sept. 16, 2005, *available at* http://www.latimes.com/news/nationworld/nation/la-091605nola—lat,0,5316762.story?coll=la-home-headlines (last visited Sept. 21, 2005).

[4] *Id.*

[5] Ryan Parry, *Mississippi Burning: Pollution Hells as Fires, Explosions and Oil Spills Follow, The Daily Mirror* (U.K.), Sept. 3, 2005, at 6, 7; *see also* Sewell Chan & Andrew Revkin, *Water Returned to Lake Pontchartrain Contains Toxic Material,* N.Y. TIMES, Sept. 7, 2005, at A1. The two spills occurred at a Bass Enterprise storage depot in Venice and at a Murphy Oil facility in Chalmette. The Bass spill was estimated at about 68,000-78,000 barrels and the Murphy spill at about 10,000 barrels. *See* Reuters, Jim Loney, *It's Almost Unimaginable, the Things We Are Going to Have to Deal With,* Sept. 6, 2005, *available at* http://hartmannwatchwatch.blogspot.com/2005/09/its-almost-unimaginable-things-we-are.html (last visited Sept. 21, 2005); Susanne Pagano, *EPA Finds Louisiana Floodwaters Contaminated with Lead, Coliform,* 36 Env't Rep. (BNA) 1870 (Sept. 9, 2005).

[6] Associated Press, *Katrina and the Environment,* Sept. 16, 2005, *available at* http://www.cbsnews.com/stories/2005/09/16/katrina/main855409.shtml (last visited Sept. 21, 2005).

[7] The Administrator of the federal Environmental Protection Agency (EPA) has indicated that all tests conducted by EPA of waters in the flooded residential areas of New Orleans exceed by at least ten times the levels determined by EPA to be safe for human exposure for bacteria that include E. coli and fecal coliform. *See* Pagano, *supra* note 5 (indicating that EPA stopped measuring the amount of bacteria in the water when the levels reached the ten-fold point). *See also* Press Release, EPA, EPA and LDEQ Report Potential Health Risks from Sediments (Sept. 16, 2005), http://yosemite.epa.gov/opa/admpress.nsf/d9bf8d9315e942578525701c005e573c/387f99c6a7a0b7808525707e0062479d!OpenDocument. By some accounts, fecal coliform has been found in some of the floodwaters at levels thousands of times higher than the levels designated by EPA as safe. Dina Cappiello, *Tainted Water,* HOUS. CHRON., Sept. 13, 2005, *available at* http://www.chron.com/cs/CDA/ssistory.mpl/nation/3351081 (last visited Sept. 21, 2005). Several people have already died from exposure to bacteria closely linked to cholera and some people have fallen ill with Vibrio vulnificus, a common marine bacteria. Genevieve Roberts, *Bacteria in Floodwater Blamed for Three Deaths,* THE INDEPENDENT, Sept. 8, 2005, available at http://news.indephttp://www.ezilon.com/information/article—9255.shtml (last visited Sept. 21, 2005); CNN, *At Least 30 Found Dead in Nursing Home,* Sept. 8, 2005, *available at* http://www.cnn.com/2005/US/09/07/katrina.impact/index.html (last visited Sept. 21, 2005); Pagano, *supra* note 5.

[8] *See* Cappiello, *supra* note 7.

[9] Marla Cone, *Floodwaters a Soup of Pathogens, EPA Finds,* L.A. TIMES, Sept. 8, 2005, at A18, *available at* http://www.latimes.com/features/health/medicine/la-me-bacteria8sep08,1,7707135.story?coll=la-health-medicine (last visited Sept. 21, 2005).

[10] Pagano, *supra* note 5.

[11] Cone, *supra* note 9.

The waters covering New Orleans' streets are also contaminated by a range of toxic chemicals,[12] posing significant health and safety risks. Significant amounts of lead, a heavy metal that creates risk of brain damage in young children, have been detected in the floodwaters. At one location, lead was detected at concentrations nearly 700 times higher than EPA standards for safe drinking water.[13] Tests conducted by EPA and the Louisiana Department of Environmental Quality also found high levels of arsenic and hexavalent chromium.[14] Other chemicals discovered in the floodwaters have been a variety of heavy metals and polycyclic aromatic hydrocarbons, all of which have been linked to cancer risk or developmental problems.[15] Some experts have stated that they would be surprised if continued testing fails to detect unsafe levels of some of these contaminants.[16]

Some of these contaminants came from the kinds of products found in most homes and commercial businesses, such as chemical cleaners, bleach, and pest control products.[17] EPA reports that it has collected 20,934 "orphan" containers with unknown contents—barrels lying in common areas with no apparent owner—throughout the affected region.[18] Others undoubtedly originated from inundated industrial facilities subject to environmental regulatory programs or from sites that managed hazardous chemicals improperly in the past.[19]

These problems are daunting, and will take months, even years, to clean up. Chemical contamination in many areas is likely to return existing hazardous waste sites to "imminent endangerment" status, and create brownfield sites that are unsuitable for redevelopment. Although our immediate focus is properly on the significant risks to human health and safety, it is worth noting that in the ensuing months, we will have to also confront the environmental impacts of this contamination: reports of a toxic plume moving through the Gulf of Mexico are already raising serious concerns about the environmental consequences for pristine and fragile resources surrounding south Florida, including its coral reefs and areas surrounding the Dry Tortugas.

Government officials responsible for removing the floodwaters from the city face a Hobson's choice: they could wait to pump the water out of the city until a mechanism was put in place to remove at least some of the contamination, or they could pump the contaminated water back into Lake Pontchartrain and the Gulf of Mexico. Both the risks that would result from waiting to remove the water until it could be decontaminated and the costs of constructing the necessary bioremediation facilities were deemed unacceptably high.[20] The pumping of floodwater with so much bacterial waste, however, is likely to lower the dissolved oxygen content of the Lake and the Gulf, creating a risk that many fish and other water-dependent organisms will die.[21] Moreover, the intentional discharge of this contamination is a sad sequel to hard-won success in cleaning up Lake Ponchartrain to the point that portions were recently deemed safe for swimming.[22]

EPA has deployed hundreds of workers to the Gulf Coast and is working against the clock to test floodwaters, soil, air, and drinking water sources to determine whether they pose unreasonable risks to the environment. When the Agency discovers hazardous conditions, it will face the challenging tasks of figuring out to re-

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[12] *E.g.,* Andrew Gumbel & Rupert Cornwell, *After Katrina: The Toxic Timebomb,* THE INDEPENDENT, Sept. 7, 2005, *available at* http://www.commondreams.org/headlines05/0907-03.htm (last visited Sept. 21, 2005).

[13] *See* Cappiello, *supra* note 7.

[14] Associated Press, EPA: *Bacteria, Lead in New Orleans Floodwaters,* Sept. 15, 2005, *available at* http://www.cnn.com/2005/TECH/science/09/14/katrina.environment.ap/ (last visited Sept. 21, 2005).

[15] Juliet Eilperin, *Flooded Toxic Waste Sites Are Potential Health Threat,* WASH. POST, Sept. 10, 2005, at A15.

[16] Cone, *supra* note 9. Some of these chemicals are known to cause or are suspected of causing adverse health effects such as cancer, birth defects, and neurological problems. Rebecca Claren, *"The Entire Community Is Now a Toxic Waste Dump,"* SALON, Sept. 9, 2005, *available at* http://www.salon.com/news/feature/2005/09/09/wasteland/index.html (last visited Sept. 21, 2005).

[17] Sewell Chan & Andrew Revkin, *Water Returned to Lake Pontchartrain Contains Toxic Material,* N.Y. TIMES, Sept. 7, 2005, at A1.

[18] EPA, RESPONSE KATRINA, *supra* note 1.

[19] A few days after the hurricane hit New Orleans, an explosion occurred at a chemical factory located 15 blocks from the French Quarter and two miles from the Superdome and the Ernest N. Morial Convention Center, which housed the bulk of the city's refugees. Ryan Parry, *Mississippi Burning: Pollution Hells as Fires, Explosions and Oil Spills Follow,* THE DAILY MIRROR (U.K.), Sept. 3, 2005, at 6, 7.

[20] *See* Reuters, Jim Loney, *Few Choices to Rid New Orleans of Poisoned Water,* Sept. 6, 2005.

[21] Gumbel & Cornwell, *supra* note 70.

[22] Amy Althans, *Presentation to Focus on Revival of Lake Basin Foundation, Chief Talks to AAUW,* TIMES PICAYUNE (New Orleans), Jan. 13, 2005; Leslie Williams, *Beach Group Has Game Plan, Natural Feel Desired for Area Along Lake,* TIMES PICAYUNE (New Orleans), Sept. 6, 2004.

move, neutralize, or contain the contamination before people return to the area. All decisionmakers should defer to this expert judgment.

ENVIRONMENTAL ENFORCEMENT AND SUPERFUND

Two fundamental issues warrant serious investigation in the wake of this disaster: first, could any of the harm to health and the environment have been avoided; and second, how to conduct and fund an adequate cleanup of the contamination.

Compliance Issues

On the first question, one important inquiry is into the degree of compliance with the Clean Water Act requirement that facilities that store petroleum products in above-ground containers prepare Spill Prevention Control and Countermeasure Plans. Such plans must include physical containment, as necessary, to prevent oil spills because, among other things, it is a civil and criminal violation of the Act to allow such spills either intentionally or negligently. Similarly, the Resource Conservation and Recovery Act requires virtually all facilities that manage, store, or dispose of hazardous waste to have emergency plans that prevent the waste from escaping into the environment in the event of an accident, including foreseeable events like a hurricane. Once again, the aftermath of Katrina must include an investigation of the compliance by New Orleans businesses with these important requirements.

With hindsight, it also seems appropriate to consider questions such as: Were factories and oil storage facilities located too close to the Coast? Did responsible industries secure them sufficiently in anticipation of a natural disaster that had been predicted for years? Were efforts to clean up toxic waste dumps before the hurricane adequate, or did superficial cleanups leave these dangerous sites vulnerable to the inevitable floods? The Clean Water Act and the Resource Conservation and Recovery Act could have prevented the environmental damage caused by Katrina if they had been implemented effectively,

Superfund Sites

Finally, there is the troubling question of flooded Superfund sites, with damage that was exacerbated by poor initial cleanups. There are three National Priorities List sites that lay in the path of the hurricane, and the Washington Post reported on September 10, 2005 that one site in the northeast section of New Orleans is submerged in water and that two sites are flooded, with their dangerous contents joining the sewage and household hazardous chemicals in the water that will soon be pumped into the Gulf of Mexico or Lake Ponchartrain.[23]

As you are well aware, the National Priorities List (NPL) is limited to the 1238 worst abandoned toxic waste sites in the country. In an interview with CPR, longtime Louisiana environmental consultant Wilma Subra confirmed the accuracy of the Post story, as well as the following analysis of its implications.[24]

Agriculture Street Landfill—The Black Love Canal

The site that was the hardest hit by Katrina is the Agriculture Street Landfill, sometimes referred to as the "black Love Canal." The 95-acre site, located three miles south of Lake Pontchartrain in a community that is 60-80 percent African-American, is an old municipal landfill where ordinary garbage was mixed together with liquid hazardous waste to a depth of between two and 32.5 feet.[25] In 1969, the City of New Orleans built a low-income housing project on top of the site, as well as the Moton Elementary School.[26] In 1993-94, after community leaders demanded that EPA conduct a full investigation of the site, the Agency decided that contamination at the site warranted an emergency cleanup and placement on the NPL.

In a health assessment prepared for the site by the Agency for Toxic Substances and Disease Registry (ATSDR), a unit of the Centers for Disease Control, experts concluded that the undeveloped portions of the site posed a "public health hazard"

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[23] Eilperin, *supra* note 15.

[24] Ms. Subra is a nationally recognized expert who testified before the U.S. Senate Environment & Public Works Committee on Superfund Reauthorization in 1997. The testimony is available at http://epw.senate.gov/105th/sub—9-04.htm. She can be reached at either (337) 367-2216 or (337) 578-3994.

[25] It operated from 1912 until 1959, but was reopened in 1965 to receive debris created by Hurricane Betsy. The combination of garbage and service station oil waste often caused fires at the site, and during that period, local residents called it "Dante's Inferno."

[26] Among the issues surrounding the site, in addition to the inadequacy of the remedy, explains Darryl Malek-Wiley, an environmental justice organizer with the Sierra Club, is the government's role in the 1970s in "encouraging first-time black homebuyers" to settle in a development that residents later learned to be on top of the former landfill. Eilperin, *supra* note 15.

and that if the land was ever used for residential housing, exposure to lead, arsenic, and polycyclic aromatic hydrocarbons (PAHs) in the soil could pose an "unacceptable health risk."[27] All of those toxic materials are now floating through the streets of New Orleans.

EPA's choice of a remedy for the site has significantly exacerbated this damage. Instead of excavating the site, treating contaminated soil in situ, or even installing a liner that would prevent the landfill's contents from washing away, EPA decided that its final remedy would be limited excavation of less than two-thirds of the site and the placement of two feet of "clean fill" on top of the buried waste.[28]

Residents asked to be relocated from their housing on top of the site, a project that would have cost approximate $12 million, and have even filed suit demanding that relocation. EPA refused and has instead spent $20 million on the cleanup described above. In desperation, a delegation traveled to Geneva Switzerland in 1999 to ask for help from the U.N. Commission on Human Rights.[29]

Bayou Bonfouca

This 54-acre site located in Slidell, Louisiana, was a wood treatment facility using creosote that operated since the late 1800s. Some 26,000 people live in the community, and the house nearest the site is 400 feet away.[30] Even though the site is supposedly cleaned up, the Louisiana Department of Environmental Quality warns citizens not to swim, and to avoid contact with over seven miles of Bayou Bonfouca, identifying the pollutant of concern as creosote.[31] The ATSDR health assessment concluded that the site is a "public health hazard" and worries that because swimming advisories are "voluntary," the potential for immediate skin burns and long-term illnesses is ongoing.[32] The companies that created the site paid to install a fence around it. EPA then used the site to burn hazardous wastes from another nearby Superfund site, ultimately burying the concentrated ash from that process in Bayou Bonfouca. The only "remedy" installed at Bayou Bonfouca was the construction of a plastic and clay cap over the top of the creosote piles, the remnants of which were likely washed out in the flooding.

Madisonville Creosote Works

This 29-acre site is also a former wood treatment facility.[33] EPA excavated some contaminated soil, treated it, and put it back down at the site. To cope with the thousands of gallons of creosote waste still under the surface, the Agency installed "recovery" trenches beneath the surface that would capture the creosote waste, keeping it out of local drinking water supplies. Flooding is likely to have disrupted those trenches, potentially spreading contamination into the community's water.

Why did the cleanup of these three sites turn out to be so vulnerable to a foreseeable and foreseen natural disaster like Katrina? The Superfund created under that statute was intended to provide the necessary legal authority to enable an adequate response to releases of hazardous substances into the environment. However, the Superfund program has been critically weakened in recent years, just when it must play a central role in cleaning up after the disaster.

Among the sources of revenue for the Superfund toxic waste cleanup program were taxes on the production of crude oil and the manufacture of feedstock chemicals, as well as general tax revenues. The industry taxes that provide the bulk of the program's funding expired in 1995. Since the taxes expired, the program has limped along on limited funds from general tax revenues and cost recovery actions

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[27] AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, PUBLIC HEALTH ASSESSMENT: AGRICULTURE STREET LANDFILL, *available at* http://www.atsdr.cdc.gov/HAC/PHA/agriculturestreet/asl—p1.html.

[28] EPA picked up 52,615 tons of soil, or an average of 86 tons per acre, and put down 177,293 cubic yards of clean fill in its place. See EPA, AGRICULTURE STREET LANDFILL NPL UPDATE (Sept. 2005), *available at* http://www.epa.gov/earth1r6/6sf/pdffiles/0600646.pdf.

[29] For an account of the trip, see http://www.ejrc.cau.edu/unchr—ej.htm. For further information about environmental justice issues at Superfund sites, see *infra The Two Americas: Race, Class, and Injustice;* ALICIA LYTTLE, AGRICULTURE STREET LANDFILL: ENVIRONMENTAL JUSTICE CASE STUDY (U. Mich., Jan. 2003, *available at* http://www.umich.edu/snre492/Jones/agstreet.htm; http://www.ejrc.cau.edu/POCEG-02.PDF; and Robert D. Bullard, *Environmental Justice in the 21st Century* (Envtl. Justice Res. Ctr.), *available at* http://assets.cambridge.org/052166/0629/sample/0521660629ws.pdf.

[30] *See* EPA, MADISONVILLE CREOSOTE WORKS NPL UPDATE (Sept. 2005), *available at* http://www.epa.gov/region06/6sf/pdffiles/0600653.pdf [hereinafter EPA, MADISONVILLE CREOSOTE WORKS].

[31] *See* LA DEP'T OF ENVTL. QUALITY, FISH CONSUMPTION AND SWIMMING ADVISORIES (Jan. 11, 2005), *available at* http://www.deq.state.la.us/surveillance/mercury/fishadvi.htm#table.

[32] *See* AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, PUBLIC HEALTH ASSESSMENT: BAYOU BONFOUCA, *available at* http://www.atsdr.cdc.gov/HAC/PHA/bonfouca/bon—p3.html.

[33] *See* EPA, MADISONVILLE CREOSOTE WORKS, *supra* note 30.

against companies that created the sites.[34] The industry taxes provided about $1.45 billion in annual funding from 1990-1995.[35] Current levels of general revenue funding are $1.3 billion.[36] The cost of the remediation of toxic waste washed out by Katrina remains to be determined.

The result of this disastrous set of policies has been to shift a significant share of the burden of financing hazardous substance cleanups away from the industries that generate the bulk of the substances found at contaminated sites and onto the shoulders of the taxpaying public. The limited funds available in the Superfund have unintended consequences, it can delay cleanups and lead EPA to choose remedies that are not adequately protective of human health. With reduced funding, EPA may be tempted to reduce its expenses by choosing remedies that are temporary and very vulnerable to bad weather along the Gulf Coast. Indeed, the remedies installed at the three sites in the New Orleans area were fated to fail.

THE TWO AMERICAS: RACE, CLASS, AND INJUSTICE

The devastating effects—the lost lives, the demolished homes, the shattered communities, the affronts to dignity—were suffered disproportionately by people of color and low-income people in New Orleans. "Natural disasters" such as hurricanes, earthquakes, and floods are sometimes viewed as "great social equalizers:" they strike unpredictably and at random, affecting black and white, rich and poor, sick and well alike. However, as Katrina has laid bare, the harms are not visited randomly or equally in our society. A reporter for The New York Times put it bluntly: "The white people got out. Most of them, anyway . . . it was mostly black people who were left behind." [37]

Twenty-eight percent of people in New Orleans live in poverty.[38] Of these, 84 percent are African-American.[39] Twenty-four percent of the adults living in New Orleans are disabled.[40] An estimated 15,000 to 17,000 men, women and children in the New Orleans area are homeless.[41] The lowest lying areas of New Orleans tend to be populated by those without economic or political resources.[42] The city's Lower Ninth Ward, for example, which was especially hard hit and completely inundated by water, is among its poorest and lowest lying areas.[43] Ninety-eight percent of its residents are African-American.[44] As Craig E. Colten, a geologist at Louisiana State University and an expert on New Orleans' vulnerable topography explains: "[I]n New Orleans, water flows away from money. Those with resources who control where the drainage goes have always chosen to live on the high ground. So the people in the low areas were the hardest hit." [45]

Moves to eviscerate government protection of health, safety—and the environment are most tenable where those burdened can be viewed as "other" or where their—circumstances are not lived or imagined—by many Americans.[46] The current Admin-

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[34] Unfortunately, there are no "deep pocket" corporations in evidence around the three sites described above, and the only alternative is for the Superfund to pick up the tab.

[35] Meredith Preston & Susan Bruninga, *Amendment to Reinstate Industry Tax to Support Trust Fund Defeated in Senate,* 35 Env't Rep. (BNA) 536. For more information on the battle to reinstate the tax, see Dean Scott, *Senators Criticize Cut in EPA Water Fund, Challenge Pace for Superfund Cleanups,* 36 Env't Rep. (BNA) 263.

[36] President Bush has recommended holding Superfund spending level, adding only $32 million to the program in his most recent budget. Because of the missing money, EPA will only be able to address 40 sites in the upcoming year, down from an average of 80 during the Clinton Administration. *Id.*

[37] Jason DeParle, Broken Levees, Unbroken Barriers: What Happens to a Race Deferred, The New York Times, Section 4, Page 1 (Sunday, Sept. 4, 2005).

[38] U.S. Census, "Louisiana Quick Facts," (2000), available at http://quickfacts.census.gov/qfd/states/22/2255000.html.

[39] U.S. Census, "Poverty Status in 1999 by Sex by Age," (2000), available at http://factfinder.census.gov/servlet/DTTable?—bm=y&context=dt&-re . . . -geo—id=16000US2255000&-search—results=01000US&-format=&-—lang=en.

[40] U.S. Census, "Social Characteristics: 1990," available at http://factfinder.census.org/servlet/QTTable?—bn=n&lang=eng&qr—name=DEC—1990—STF3—DP2&ds—name=DEC-1990—STF3&geo—id=05000US22071.

[41] City of New Orleans Health Department, "Homeless Healthcare," available at http://www.cityofno.com/portal.aspx?portal=48&tabid=6.

[42] Jason DeParle, supra note 37 (quoting Craig E. Colten, Louisiana State University).

[43] Id.; Greater New Orleans Community Data Center, "Lower Ninth Ward Neighborhood: Income & Poverty," available at http://gnocdc.org/orleans/8/22/income.html (poverty rates in the Lower Ninth Ward ten percent higher than in Orleans Parish generally).

[44] Greater New Orleans Community Data Center, "Lower Ninth Ward Neighborhood: People and Household Characteristics," available at http://gnocdc.org/orleans/8/22/people.html.

[45] Jason DeParle, supra note 37.

[46] See, e.g., Catherine A. O'Neill, Risk Avoidance, Cultural Discrimination, and Environmental Justice for Indigenous Peoples, 30 Ecology L. Q. 1 (2003).

istration in particular has endorsed a shift in responsibility for basic health, safety and environmental protections. It has sought to diminish the government's role in assuring even minimally healthful conditions for all, leaving it to those at risk to protect themselves. The effect of this shift is to burden people of color and the poor—because these groups are disproportionately the ones who are most exposed and most vulnerable, they will be the ones left to fend for themselves.[47] They are also the ones with the fewest resources to do so.

Katrina also raises questions of justice in cleanup and rebuilding. Community members and environmental justice leaders have raised concerns about when and how these contaminants will be cleaned up, citing evidence of inequities in environmental cleanups more generally. They and others have also questioned the rush to waive standard health, safety, environmental and social protections. While it might have been important to waive normal Clean Water Act permits to allow the waters to be pumped out of a flooded city as quickly as possible, other waivers are unjustified.[48]

CONCLUSION

In the aftermath of Katrina, we must rethink our past policies and priorities in order to avoid similar disasters in the future. We must be sure that EPA and other relevant agencies have adequate resources to respond to the unavoidable consequences of future disasters. We urge the Committee to support the creation of an adequately funded, bipartisan, and independent commission to address the following critical questions:

CRITICAL QUESTIONS

1. Katrina caused serious damage to the infrastructure that supports oil and gas production, as well as hundreds of facilities handling significant quantities of hazardous chemicals.

a. How does EPA plan to conduct an independent assessment of the environmental releases that occurred at such facilities, including air emissions, spills of chemical product and waste, and fires caused by such events?

b. What monitoring is being undertaken and what additional monitoring should be planned to adequately determine the nature and extent of hazards to health and environmental contamination?

c. Is information from all appropriate government and non-governmental sources being incorporated into assessment of the releases?

2. What are the protocols for testing drinking water for the broader suite of chemicals likely to have migrated into supplies as a result of the storm and how are federal and state authorities ensuring that such testing gets done?

3. What plans have been made to rebuild the area's publicly owned treatment works so that they can deliver adequate services before the city is re-populated?

4. How will EPA ensure that the re-habitation of New Orleans, Mississippi, and other areas affected by Katrina is safe in light of remaining toxic deposits in soil and water?

5. Is all information relevant to public health and safety being shared with the public in a timely fashion?

6. To what extent did the chemical and biological contamination that has been discovered in New Orleans since Katrina result from noncompliance with or inadequate enforcement of the federal environmental laws described above?

7. Have the EPA and Congress undertaken the necessary assessment of the funding needed to fully implement and enforce federal environmental laws in order to protect public health and the environment in cases of natural and manmade disasters and reduce potential future cleanup costs?

8. Had state and local officials complied with their planning responsibilities under EPCRTKA, and, if not, did inadequate planning exacerbate the risks to health and safety now facing New Orleans?

9. A long, intentional, and successful effort to weaken the Superfund program has left it without adequate funds to address the new dimensions of risk posed by Superfund sites that Hurricane Katrina has made apparent. In addition, the aftermath of the hurricane has created need for an emergency response and may produce new sites that warrant cleanup under Superfund.

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[47] Id.

[48] See, e.g., Michael Janofksy, *Bill Would Let E.P.A. Relax Rules for Cleanup,* N.Y. TIMES, Sept. 16, 2005, at A18 (national edition).

a. What is the vulnerability of all Superfund sites, including those near waterbodies, to natural and manmade disasters? Does EPA have adequate funding to undertake such an assessment?
b. How will EPA and the states deal with the potentially responsible parties who created the sites in the first place, and either never stepped forward to pay for cleanup, or paid for a remedy that now appears inadequate?
c. What sources of funding will EPA employ in its broader response to the contamination in the wake of the hurricane?

10. What steps must be taken to ensure that race or class disparities don't affect the cleanup methods selected and used in different areas?

11. What steps are being taken to ensure that the affected communities have adequate opportunities to participate in the relevant decision-making processes?

Thank you, Mr. Chairman and members of the Subcommittee for the opportunity to appear before you today.

CPR CENTER FOR PROGRESSIVE REFORM

Broken Levees: Why They Failed[1]

The failure of the levees in New Orleans was catastrophic for the city and for its most vulnerable citizens. In the aftermath of Hurricane Katrina, it is important to understand why the levees failed and what actions, had they been taken, would have prevented, or reduced, the flooding of New Orleans.

The failure of the levees was not just predictable; it was predicted. Scientists have warned for years that a strong storm could breach the levees. Likewise, efforts to make New Orleans safer go back years. In 1965, Congress authorized the Corps of Engineers to improve hurricane protection for New Orleans. The Corps considered two options, pursued one of them for a while, and then changed to the second option. Neither project, however, was designed to protect New Orleans from more than a category 3 hurricane. Thus, neither option was intended to save New Orleans from a hurricane like Katrina.

The failure to protect New Orleans resulted from an inadequate plan by the Army Corps of Engineers to save the city and from the failure of federal government to fund badly needed improvements in that plan. The Corps also constructed a little used ship canal through the middle of New Orleans that made the city considerably more vulnerable to the flooding that occurred.

Right-wing pundits and politicians, however, have attempted to blame the flooding on environmental litigation that temporarily halted the Corps from pursuing the first option.[2] They argue that if the law suit had not been initiated, the Corps would have been able to complete the first option and the city would therefore have been better protected. As this report documents, these claims are wholly unfounded. It is beyond dispute that the litigation would have only temporarily delayed the Corps from pursing option one had it chosen to do so. In the process of responding to the lawsuit, however, the Corps decided to switch to the second option because it believed that one represented the better policy. This switch also responded to the widespread local public opposition to the first option. In any case, the first option would not have prevented the flooding in New Orleans even if it had been completed. Neither the first or second option was designed to protect New Orleans from more than a category 3 hurricane. Moreover, the first option, had it been completed, would not have stopped the flooding that occurred along the ship canal.

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[1] This Special Report was prepared by Center for Progressive Reform scholars Donald T. Hornstein, Douglas A. Kysar, Thomas O. McGarity, and Sidney A. Shapiro. For more information, contact CPR's media office at mfreeman@progressivereform.org. Visit CPR on the web at www.progressivereform.org.

[2] See, e.g., R. Emmett Tyrell, Jr., Eco-Catastrophe Echoes, *Washington Times*, September 16, 2005; John Berlau, Greens vs. Levees, *National Review*, Online, September 8, 2005, available at http://www.nationalreview.com; You Can Pay Me Now, or You Can Pay Me Later, *The Quando Blog*, available at http://www.quando.net/details.aspx?Entry=2595.

We Knew This Would Happen

Not long after the levees broke and water from Lake Pontchartrain on the north and Lake Borgne on the east began to fill New Orleans, President Bush's told television correspondent Diane Sawyer that no one could have foreseen the breach of those levees.[3] In fact, over a period of many years, scientists had predicted that a strong storm could breach the levees. Scientists especially feared that even a relatively weak storm coming from the right direction would push a wall of water into the heart of New Orleans from Lake Borgne through the funnel-shaped Mississippi River Gulf Outlet canal and into the Industrial canal, destroying the levees along the canal and flooding much of St. Bernard Parrish and the Lower Ninth Ward. It now appears that this is exactly what happened.[4]

The President's comments were addressed to the question of the adequacy of huge and complex levee system that surrounds New Orleans and makes the continued existence of that city possible. Hurricane Katrina may have been an act of Nature, but the levees and associated flood protection systems that are an indispensable part of the infrastructure of New Orleans and surrounding areas are clearly the works of human beings. And the level of protection afforded by the New Orleans flood control apparatus is primarily a function of the level of resources, political will, and competence that federal and state governments applied to planning, construction, and maintenance of that system. In short, the security provided by the levee system and associated protections have always been the responsibility of government, and the government failed to fulfill its responsibility.

Overview of the Levee System

There are three flood risks in New Orleans. Because New Orleans is situated in the delta formed at the mouth of the Mississippi River, it has always maintained a flood control system in place to protect it from the risks of flooding from the river to the south, Lake Pontchartrain to the north and Lake Borgne and the Gulf of Mexico to the east.[5]

There is a risk of flooding from the Mississippi River because of flood waters coming down the Mississippi River from rainfall occurring hundreds of miles to the north. The primary line of defense against river flooding is an extensive system of levees and dikes that extends along the length of the river. That system, which contains the city's highest levees, averaging 25 feet above sea level in height, was not involved in the Hurricane Katrina disaster. Claims that environmental litigation involving the Mississippi River levees caused the New Orleans floods are therefore uninformed and unfounded.[6]

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[3] Dan Froomkin, White House Briefing: A Dearth of Answers (Sept. 1, 2005), available at http://www.washingtonpost.com/wp-dyn/content/blog/2005/09/01/BL2005090100915.html?nav=rss_politics.
[4] Michael Grunwald, Canal May Have Worsened City's Flooding, *Washington Post*, September 14, 2005, at A21.
[5] Mark Fischetti, Drowning New Orleans, *Scientific American*, October 1, 2001.
[6] See, e.g., R. Emmett Tyrell, Jr., Eco-Catastrophe Echoes, *Washington Times*, September 16, 2005; John Berlau, Greens vs. Levees, *National Review*, Online, September 8, 2005, available at http://www.nationalreview.com

New Orleans is protected from Lake Pontchartrain and Lake Borgne, which are located almost side-by-side on the north side of New Orleans, by an interconnected series of levees that extends along the lakes. (A map of the lakes and levees by the *Times Picayune* can be found at http://www.nola.com/hurricane/popup/nolalevees_jpg.html.) These levees are considerably smaller than the ones that protect New Orleans from flooding of the Mississippi. They range from 13.5 to 18 feet above sea level in height.

Another series of somewhat lower levees provides protection to Eastern New Orleans and St. Bernard Parish, which are located to the north and east of New Orleans, from Lake Pontchartrain on the north and from Lake Borgne and the Gulf on the west. Parts of the parish are located between the two lakes.

Because New Orleans is below sea level and rapidly sinking, rainwater that flows into the city must be removed not by natural drainage, but with huge pumps that force the water to move along three man-made canals, called "outfall canals," to Lake Pontchartrain. The canals are lined with concrete walls that prevent the water from spilling into the city. Water flowing through the canals is nearly as high as the rooftops of some houses adjoining the canals.[7] All of the levees were built by the Corps of Engineers and are maintained by various local levee districts.[8]

In addition to the drainage canals, the Corps of Engineers constructed two very large canals to permit ocean-going vessels to move from the Mississippi River through the city to Lake Pontchartrain or the Gulf of Mexico to the south of Lake Borgne. The Industrial Canal slices north/south across the city between the river and the lake at the point where they are closest to each other. The Mississippi River-Gulf Outlet (MRGO) canal bisects the Industrial Canal and travels east/west to the Intracoastal Canal near Lake Bourne. The shipping canal levees consist of concrete floodwalls and earthen levees.

Levee Planning and Construction

In the wake of Hurricane Betsy, which struck in September 1965, Congress authorized a massive hurricane protection improvement effort called the Lake Pontchartrain and Vicinity Hurricane Protection Project (LPVHPP) to provide hurricane protection to the Greater New Orleans metropolitan area.[9] To implement this statute, the Corps of Engineers studied two major options -- the "high level" option and the "barrier" option.

The High Level Option

The "high level" option consisted simply of raising all of the existing levees and, where necessary, constructing new high level levees to a height that would prevent flooding

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[7] First Line of Defense: Hoping the Levees Hold, available at http://www.nola.com/hurricane/popup/nolalevees_jpg.html.

[8] Id.

[9] Hearings on Hurricane Protection Plan for Lake Pontchartrain and Vicinity before the Subcommittee on Water Resources of the House Committee on Public Works and Transportation, 95th Cong., 2d Sess. (1978) [hereinafter cited as 1978 House Hearings], at 20 (testimony of Colonel Early J. Rush III).

that could result from the "standard project hurricane," a mythical hurricane that was designed to simulate a hurricane that would hit New Orleans once every 200 to 300 years.[10] Although the Corps later determined that the model hurricane was impossible, it was roughly equivalent to a fast moving category 3 storm on the Saffir-Simpson hurricane scale.[11] In practice this would have resulted in raising the levees from between 9.3 and 13.5 feet above sea level to between 16 and 18.5 feet above sea level.[12]

The Barrier Option

Under the "barrier" option, the Corps was to construct levees along the far eastern edge of Lake Pontchartrain where it flows into Lake Borgne and the Gulf of Mexico through two relatively narrow channels at the Rigolets and Chef Menteur. The Corps was supposed to construct huge structures at the two passes that would allow water to flow back and forth between the lakes but could be closed as a hurricane approached. The Corps believed that the levees and the barrier structure would prevent the storm surge preceding the hurricane from crossing from Lake Bourne into Lake Pontchartrain.[13] Like the high level option, the barrier option was designed to protect against the standard project hurricane, a hypothetical hurricane that was the equivalent of a fast moving Category 3 hurricane.

First Choice: The Barrier Option

The high option had several drawbacks, including the need to obtain rights of way for additional land near the levees to allow them to be widened so that they could be raised. In addition, the high level plan would not prevent the flooding of the industrial areas that were located outside the levees.[14] The Corps therefore decided to implement the barrier option, and construction began on floodwalls along the east and west sides of the Industrial Canal in 1967.[15]

To speed the project along, the Orleans Levee Board financed and constructed portions of the floodwalls, and this relative inexpensive aspect of the project was virtually completed by 1973.[16] Work on the barrier structures and levees running from New Orleans to the those structures, however, was greatly delayed because landowners opposed to the project demanded high prices for the property that the Corps needed for those levees, forcing the Corps to exercise its power of eminent domain.[17]

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[10] 1978 House Hearings, supra, at 21 (testimony of Colonel Early J. Rush III).
[11] Jerry Mitchell, E-Mail Suggests Government Seeking to Blame Groups, Mississippi *Clarion-Ledger*, September 16, 2005, at A1 (quoting Corps of Engineers spokesperson John Hall); John McQuaid & Mark Schleifstein, Evolving Danger, New Orleans *Times-Picayune*, June 23, 2002, at J12.
[12] United States General Accounting Office, Cost, Schedule, and Performance Problems of the Lake Pontchartrain and Vicinity, Louisiana, Hurricane Protection Project (PSAD-76-161 (August 31, 1976) [hereinafter cited as 1976 GAO Report], at 3.
[13] 1978 House Hearings, supra, at 22 (testimony of Colonel early J. Rush III).
[14] Id. at 21 (testimony of Colonel early J. Rush III).
[15] The Orleans Levee District -- A History, available at http://www/orleanslevee.com/history.htm [hereinafter cited as Levee District History]
[16] Id.
[17] 1976 GAO Report, supra, at 16.

In 1976, a coalition of local fishermen and an environmental group called Save Our Wetlands sued the Corps of Engineers alleging that the final environmental impact statement (FEIS) for the project was inadequate.[18] On December 30, 1977, a federal judge issued an injunction preventing the Corps from conducting any work on the barrier project until it had prepared an adequate FEIS. The injunction was subsequently modified to permit continued construction of the levees between the lake and the City of New Orleans.[19]

Second Choice: The High Level Plan

The lawsuit temporarily prevented the Corps from doing further work on the barrier option, but the Corps abandoned this option for other reasons. When the injunction sent the Corps back to the drawing board, it reconsidered the costs and benefits of the barrier and high level options. At the same time, it was encountering strong opposition to the barrier plan from local citizens who did not want to pay a very high price for a project that might endanger the vitality of Lake Pontchartrain and from representatives of areas on the Lake Borgne side of the barrier who would have been at greater risk of flooding during hurricanes.[20]

The intense public opposition was in evidence in congressional hearings conducted in New Orleans the week after the injunction issued. A spokesperson for the League of Women Voters argued that the Corps had never undertaken a study of the cost to taxpayers of maintaining the urbanization of wetlands that the project envisioned, and she noted that the voters of New Orleans had defeated proposals to participate in the financing of the barrier project on three separate occasions, but had voted to approve a similar project without the barriers the previous year.[21] An informal poll conducted by Representative Robert Livingston indicated that a substantial majority of the New Orleans citizens either opposed the project (38.5 percent) or favored discontinuation until the studies could be completed (23.6 percent).[22] Not known for his antipathy to federally financed public works projects in his district, Representative Livingston expressed considerable reservations about the wisdom of this particular project. The state representative from St. Tammany Parish, part of which was on the Lake Borne side of the barrier project warned that the project would put his parish at risk when the gates were closed because it would deflect the surge from Lake Bourne into St. Tammany parish.[23]

By 1982, the New Orleans district of the Corps of Engineers had changed its mind and favored the high level plan "because it would cost less than the barrier plan" and "have fewer detrimental effects on Lake Pontchartrain's environment."[24] One of the factors underlying the changed cost assessment was no doubt the escalating cost of acquiring rights of way from

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[18] Levee District History.
[19] Id.
[20] See discussion of the opposition below.
[21] 1978 House Hearings, supra, at 11 (testimony of Charlotte H. Nelson).
[22] 1978 House Hearings, supra, at 12.
[23] 1978 House Hearings, supra, at 47-48 (testimony of Edward G. Scogin).
[24] United States General Accounting Office, Improved Planning Needed by the Corps of Engineers to Resolve Environmental, Technical and Financial Issues on the Lake Pontchartain Hurricane Protection Project (GAO/MASAD-82-39 (August 17, 1982), at 2.

property owners who opposed the barrier project.[25] The Corps did not make a final decision on how to proceed until 1985 when it decided to implement the high level plan because by then it was considerably less expensive. The high level plan of 1985 was substantially completed prior to Hurricane Katrina and repair and maintenance projects along the levees and floodwalls were ongoing.[26]

Why the Levees Failed

Lake Pontchartrain

The water that flooded New Orleans did not flow over the high level levees situated between the lake and the city. Instead, it appears that the surge flowed up the 17th Street and London Avenue canals and caused one breach of the floodwall along the 17th Street canal and two breaches of the floodwall along the London Avenue canal.

The floodwalls along the two "outlet" canals were breached even though they had recently been remodeled. The Corps had enhanced these floodwalls pursuant to the "high level" hurricane protection plan. In the aftermath of the storm, the Corps of Engineers stressed that the two specific outlet levees that had breached were "fully completed" and not on the list of unfunded projects.[27]

Nevertheless, the breach should have been anticipated. The hurricane protection plan that was implemented after 1985 was designed to protect the city against the "standard project" hurricane that roughly corresponds to a fast-moving category 3 storm. Scientists had for years prior to the storm predicted that the levee system could not withstand a Category 4 or Category 5 storm.[28] Hurricane Katrina struck the Louisiana/Mississippi coast as a Category 4 storm.

Lake Borgne

Although the Corps enhanced the levees protecting Eastern New Orleans and St. Bernard Parish as part of the high level plan, these areas were not protected from the "end around" exposure that occurred during Hurricane Katrina. The hurricane surge entered Lake Borgne from the Gulf of Mexico and proceeded up the MRGO canal to the Industrial canal in the heart of New Orleans. Hurricane Katrina appears to have destroyed as much as 90 percent of the levees and flood walls along the MRGO canal in St. Bernard parish as it pushed up the narrowing canal from Lake Borgne to the conjunction of the MRGO canal with the Industrial canal. Colonel Richard Wagenaar, the Corps' head engineer for the New Orleans district,

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[25] 1976 GAO Report, supra, at 16.
[26] Levee District History, supra.
[27] Andrew Martin & Andrew Zajac, Flood-Control Funds Short of Requests, *Chicago Tribune*, September 1, 2005, at 7.
[28] Jerry Mitchell, E-Mail Suggests Government Seeking to Blame Groups, Mississippi *Clarion-Ledger*, September 16, 2005, at A1 (quoting Corps of Engineers spokesperson John Hall); John McQuaid & Mark Schleifstein, Evolving Danger, New Orleans *Times-Picayune*, June 23, 2002, at J12.

reported that the eastern levees were "literally leveled in places."[29] That same surge probably caused the breaches in the floodwalls along the Industrial canal.

The MRGO canal, which was completed in 1968, is a deep draft seaway channel that extends for approximately 76 miles east and southeast of New Orleans into Breton Sound and the Gulf of Mexico. It was designed to shorten the distance for ships from the eastern shipping lanes of the Gulf to New Orleans, but it has never lived up to its economic expectations. Less than three percent of the New Orleans port's cargo traffic uses the MRGO; this amounts to less than one ship per day.[30] According to one estimate, the government spends $7 million to $8 million per year (about $10,000 for every large vessel that uses the canal) just to maintain the canal.[31]

This very scenario was predicted long before Hurricane Katrina struck. In 2002, the Corps of Engineers acknowledged that "[t]he MRGO levee is more likely to be affected than the area in the lake itself."[32] Proponents of closing the canal pointed out that, with the erosion of the wetlands in the unleveed stretches south and east of the city, it had "evolved into a shotgun pointed straight at New Orleans."[33]

More recently, Professor Hassan Mashriqui of Louisiana State University undertook an extensive modeling exercise of the "shotgun" scenario.[34] Professor Mashriqui warned that the MRGO created a "funnel" that would direct a storm surge from Lake Bourne to the Industrial Canal with resulting destruction of flood walls along that canal.[35] Satellite images and Corps of Engineers flyovers confirmed that the storm surge destroyed levees along the MRGO canal in a way that was entirely consistent with Professor Mashriqui's model, and it is likely that the same surge destroyed portions of the floodwall along the Industrial Canal.[36] G. Paul Kemp, an oceanographer at the LSU Hurricane Center, agreed that the MRGO "funnel" was "a back door into New Orleans," and he had little doubt that it "was the initial cause of the disaster."[37] In addition to its potential to channel hurricane surges into the heart of New Orleans, the MRGO canal has over the years severely eroded the wetlands south of New

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[29] Ralph Vartabedian, Much Wider Damage to Levees Is Disclosed, *Los Angeles Times*, Sept. 13, 2005, available at http://www.latimes.com/news/nationworld/nation/la-na-corps13sep13,0,5962987.story?coll=la-home-headlines.

[30] Michael Grunwald, Canal May Have Worsened City's Flooding, *Washington Post*, September 14, 2004, at A21.

[31] Lake Pontchartrain Basin Association, Martello Castle Background Information, available at http://wetmaap.org/Martello_Castle/Supplement/mc_background.html [hereinafter cited as Martello Castle Background Information].

[32] Jerry Mitchell, E-Mail Suggests Government Seeking to Blame Groups, Mississippi *Clarion-Ledger*, September 16, 2005, at A1 (quoting Corps of Engineers spokesperson John Hall); John McQuaid & Mark Schleifstein, Evolving Danger, New Orleans *Times-Picayune*, June 23, 2002, at J12.

[33] John McQuaid & Mark Schleifstein, Evolving Danger, New Orleans *Times-Picayune*, June 23, 2002, at J12.

[34] Michael Grunwald, Canal May Have Worsened City's Flooding, *Washington Post*, September 14, 2004, at A21.

[35] Id.

[36] Id.

[37] Id.

Orleans.[38] In 1998, the St. Bernard parish Council unanimously passed a resolution demanding that the MRGO be closed.[39]

Why New Orleans Was Not Better Protected

Not a National Priority

The vulnerability of New Orleans to a catastrophe were well known and widely predicted, yet recent efforts to enhance the protection of New Orleans from Lake Pontchartrain have floundered. An attempt in 1996 to re-evaluate the Lake Pontchartrain levees broke down in disputes over modeling and other bureaucratic disagreements.[40] More recently, the Bush Administration rejected a Corps of Engineers request for $27 million to pay for hurricane protection projects along Lake Pontchartrain and proposed a budget of only $3.7 million. Congress ultimately appropriated $5.7 million for the projects, but the Corps still had to delay seven levee improvement contracts.[41]

Joseph Suhayda, an Emeritus Professor of Engineering at LSU, observed that the part of the 17th Street floodwall where a recent breach occurred was four feet lower than the rest of the floodwall. He believes that "they could have significantly reduced the impact" of Hurricane Katrina if the improvement projects had been fully funded.[42] The chief of engineers for the Corps, however, responded that had the pending projects "been fully complete," flooding of the business district and the French Quarter would still have resulted from the intensity of the storm.[43]

Mike Parker, a former Republican Congressman from Mississippi who was until 2002 the chief of the US Army Corps of Engineers, was forced to resign when he publicly stated to the Senate Budget Committee that the national interest was being harmed by President Bush's proposal to cut over $2 billion from the Corps' $6 billion budget.[44] After Hurricane Katrina struck, Mr. Parker added that President Bush had not adequately funded improvements to the very levees in New Orleans that had been breached; indeed, Mr. Parker stated that had full funding been authorized "there would have been less flooding than you have."[45] An official Corps of Engineers memo dated May 2005, long after Parker left the agency, seemed to corroborate this possibility. It stated that the Bush Administration's

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[38] Martello Castle Background Information, supra.
[39] Michael Grunwald, Canal May Have Worsened City's Flooding, *Washington Post*, September 14, 2004, at A21.
[40] John McQuaid & Mark Schleifstein, Evolving Danger, New Orleans *Times-Picayune*, June 23, 2002, at J12.
[41] Andrew Martin & Andrew Zajac, Flood-Control Funds Short of Requests, *Chicago Tribune*, September 1, 2005, at 7.
[42] Id.
[43] Id. See also Michael Grunwald, Money Flowed to Questionable Projects, *Washington Post*, September 8, 2005, at A1.
[44] John McQuaid & Mark Schleifstein, Shifting Tides, New Orleans *Times-Picayune*, June 26, 2002, at 14.
[45] Andrew Martin & Andrew Zajac, Flood-Control Funds Short of Requests, *Chicago Tribune*, September 1, 2005, at 7.

funding levels for fiscal years 2005 and 2006 were not enough to pay for new construction on the New Orleans levees.[46]

Although it is tempting to blame the Bush Administration for the failure to fund critical levee improvement projects, the truth is that improving the Lake Pontchartrain levees has been a low priority for many administrations, Democratic and Republican, and for Congress. The Administration and Congress have had other priorities over a longer period of time than the last four years. In fact, it seems clear that even the Louisiana congressional delegation has on occasion insisted that the Corps direct its resources to projects, like a $194 million project for deepening the Port of Iberia and replacing the lock on the Industrial canal, unrelated to the New Orleans levee protection system.[47]

Not a Corps Priority

The Corps of Engineers aided and abetted the lack of attention paid to protecting New Orleans in three ways. First, the Corps is very reluctant to participate in the process of setting priorities for its projects. Once the Corps has determined that the benefits of a proposed project exceed its costs, the Corps leaves it to Congress to decide through the appropriations process those projects that receive funding and those that do not.[48]

Second, the Corps' cost-benefit analysis procedures do not require the analysts doing the assessment to take potential loss of life into account in the analysis. According to the GAO, the Corps' guidance (Engineer Regulation 1105-2-100) directs analysts to address the issue of prevention of loss of life when evaluating alternative plans, but they are not required to formally estimate the number of lives saved or lost as a potential effect of a project.[49] In situations where historical data exist, the analysts have the option to estimate the number of persons potentially affected by a project and include this number as an additional factor for the consideration of decision makers. Hence, a high cost project that has few economic benefits, but which would save many lives, may not pass the cost-benefit test if the Corps does not include the lives saved as a monetized benefit.

Finally, even when Congress has appropriated money to protect New Orleans better, the Corps apparently has not been in a hurry to get the job done. For example, Congress in 1999 appropriated money for a $12 million study to determine how much it would cost to protect New Orleans from a Category 5 hurricane, but the study had not even been launched as of September 2005.[50]

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[46] Andy Sullivan, Budget Cuts Delayed New Orleans Flood Control Work, Reuters, Sept. 1 2005, available at http://www.alertnet.org/thenews/newsdesk/N01279059.htm

[47] Michael Grunwald, Money Flowed to Questionable Projects, *Washington Post*, September 8, 2005, at A1.

[48] Id. (quoting Tim Searchinger, senior attorney, Environmental Defense).

[49] Government Accountability Office, Improved Analysis of Costs and Benefits Needed for Sacramento Flood Protection Project 20 n.13 (2003) (GAO-04-3). Also, Jim Barnett, Instead of Shoring Up Levees, Corps Built More, *The Oregonian*, September 18, 2005, http://www.oregonlive.com/search/index.ssf?/base/exclude/112695455718420.xml?oregonian?lcg&coll=7.

[50] Andrew Martin & Andrew Zajac, Corps: Lack of Funds Did Not Contribute to Flooding, *Chicago Tribune*, September 2, 2005, at 1.

The Right Wing's Blame Game

The reasons why New Orleans and its vulnerable citizens were not better protected are clear. The levee system was not designed to protect the city from more than a category 3 hurricane system, and there was little budget support for improving the levee system even though its limitations were widely recognized.

Some conservatives, however, are attempting to tell another story. Not long after the damage to New Orleans became apparent, retired Corps of Engineers officials and conservative pundits began a concerted campaign to blame the damage on the litigation that Save Our Wetlands and Lake Pontchartrain fishermen brought against the Corps of Engineers in 1976.[51] Citing the barrier project litigation and irrelevant litigation involving the Mississippi River levee system far upstream of New Orleans, conservative Commentator R. Emmett Tyrell, Jr. claims that "[f]or too long, environmentalist fanatics with no sense of a broad-based commonweal have had a veto over government and private-sector projects essential to the health and well-being of millions of Americans."[52] A conservative blogger referred to the lawsuit against the barrier project, described above, as "green genocide."[53] A house task force has decided to add the litigation to its agenda as it considers reforms for the National Environmental Policy Act (NEPA).[54] And the Bush Administration Justice Department has, at the request of Senator James Inhofe, circulated an email to its attorneys asking for information on any case in which they have defended the Corps from environmental claims involving the levees protecting New Orleans.[55] These claims are wholly unfounded.

Temporary Interruption

The lawsuit brought by the environmentalists was entirely justified. The EIS filed by the Corps was clearly inadequate. Nevertheless, it is clear beyond dispute that the injunction should have only delayed the project slightly until the Corps remedied the problems that the court had identified in the FEIS.

The court in the *Save Our Wetlands* litigation found that "the picture of the project painted in the FEIS was not in fact a tested conclusion but a hope by the persons planning the project that it could in fact be constructed so as to meet the environmental objectives set out in the FEIS."[56] The court noted that the Corps' chief engineer for the New Orleans Division had

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[51] Ralph Vartabedian & Peter Pae, A Barrier that Could Have Been, *Los Angeles Times*, September 9, 2005, at A1 (quoting former Corps of Engineers chief counsel Joseph Towers).
[52] R. Emmett Tyrell, Jr., Eco-Catastrophe Echoes, *Washington Times*, September 16, 2005.
[53] Michael Tremoglie, New Orleans: A Green Genocide, *FrontPageMagazine*.com, September 8, 2005, available at http://www.frontpagemag.com/Articles/rintable.asp?ID=19418.
[54] Ralph Vartabedian & Richard B. Schmitt, Mid-60s Project Fuels Environmental Fight, *Los Angeles Times*, September 17, 2005, at A17.
[55] Dan Egan, Senate Panel Investigating Challenges to Levees, *Washington Post*, September 17, 2005, at A10; Jerry Mitchell, E-Mail Suggests Government Seeking to Blame Groups, Mississippi *Clarion-Ledger*, September 16, 2005, at A1; Mark Sherman, Justice Dept. Looks at Lawsuits, Levees, *Seattle Post-Intelligencer*, September 16, 2005.
[56] Save Our Wetlands v. Rush, Civ. No. 75-3710, Slip Opinion (E.D. La. 1977).

requested further model studies because the studies upon which the draft EIS relied were undertaken more than a decade earlier for an obsolete version of the project. The chief engineer feared that the flow of water between the lakes, which was critical to maintaining the integrity of marine life in Lake Pontchartrain, was far less in the new version of the project than in the earlier version. The requested model studies were initiated, but they had not been completed when the FEIS came out, and it continued to rely upon the obsolete studies.[57]

More importantly, the biological analysis undertaken in the FEIS relied entirely on a single telephone conversation with a single marine biologist who was asked to speculate on the impact of the project on marine organisms using the inter-lake flow rates predicted by the obsolete model. The Corps of Engineers official who was responsible for preparing the EIS expressed reservations about the statements on the effects of the structures on marine life in the lake, and he suggested that the conclusion that the project "would not" have a significant impact on lake biology should be changed to "should not." He was, however, overruled. The court further noted that the assessment of the benefits of the project included the benefits of further urban development on wetlands that would be reclaimed from the lake after the project was completed, but it failed to take into consideration that the area had also been designated as a protected wetland. A Corps economist pointed this out and asked that the analysis be changed, but he was overruled.[58]

Finally, the court concluded that in light of "the problems of which the Corps was aware with respect to the possibility of significantly decreased tidal flow through the structures," the analysis of alternatives in the FEIS was inadequate. The court concluded that the FEIS "precludes both the public and the governmental parties from the opportunity to fairly and adequately analyze the benefits and detriments of the proposed plan and any alternatives to it."[59]

The court therefore enjoined further work on the barrier structures aspect of the project until the Corps had completed an adequate FEIS. It stated in no uncertain terms, however, that its opinion and order should "in no way be construed as precluding the Lake Pontchartrain project as proposed or reflecting on its advisability in any manner," and it stressed that "[u]pon proper compliance with the law with regard to the impact statement, this injunction will be dissolved and any hurricane plan thus properly presented will be allowed to proceed."[60]

Although some recent commentators have stated unequivocally that the court's injunction prevented the barrier project from going forward, there is simply no dispute that the injunction should have delayed the barrier option only until the Corps remedied the problems that the court had identified in the EIS. The court would have lifted the injunction as soon as the Corps of Engineers simply updated the EIS with adequate hydrologic modeling, as requested by its own chief engineer, conducted a more thorough biological assessment, and considered a few reasonable alternatives.

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[57] Id. at 5.
[58] Id. at 6.
[59] Id.
[60] Id. at 7.

The Real Story

The real story is considerably different from the version being promoted by conservative commentators and politicians. As established earlier, the Corps did not abandon the project because of the lawsuit. In the process of responding to the EIS, the Corps reevaluated the "high level" alternative and decided to adopt that approach instead. There was also intense public opposition to the barrier plan from local political officials and local citizens.

Moreover, it is now becoming clear that Hurricane Katrina destroyed as much as 90 percent of the levees and flood walls along the MRGO canal in St. Bernard parish as it pushed up the narrowing canal from Lake Bourne to the conjunction of the MRGO canal with the Industrial canal and that the same surge probably caused the breaches in the floodwalls along the Industrial canal. The barrier plan that Corps was considering at the time of the litigation would not have prevented the surge from moving from Lake Bourne through the funnel of the MRGO canal into the heart of New Orleans, and it might well have exacerbated that surge.

Finally, as discussed earlier, the 1977 barrier project would not have protected New Orleans from Hurricane Katrina, even if it had been built. The project was designed to withstand only a fast-moving Category 3 hurricane, based on a model called the "standard project hurricane,"[61] and it was never clear that the project would in fact have worked as envisioned, because the model was flawed. A spokesperson for the New Orleans division of the Corps acknowledged that he was not sure "how much [the barrier project] would have prevented anything."[62] It should not be equated with the recently proposed barrier projects designed to withstand a Category 5 hurricane and to be more environmentally friendly. It is by no means clear that the barrier project as envisioned in 1977 would have protected New Orleans from the Lake Pontchartrain surge of Hurricane Katrina.

Conclusion

The failure of the levees in New Orleans was predicted. Scientists have warned for years that a strong storm could breach the levees. The reason is simple. The levees were not designed and built to protect the city and its most vulnerable citizens from more than a fast moving category 3 hurricane. Efforts to improve the levees have fallen victim to budget cuts in the Bush administration and previous administrations. The Corps also constructed a little used ship canal through the middle of New Orleans that made the city considerably more vulnerable to the flooding that occurred.

The right wing attempt to blame the environmentalists, while politically convenient, is completely rebutted by the facts. It is beyond dispute that the EIS litigation would have only temporarily delayed the Corps from pursuing the barrier option had it chosen to do so. We

[61] Jerry Mitchell, E-Mail Suggests Government Seeking to Blame Groups, Mississippi *Clarion-Ledger*, September 16, 2005, at A1 (quoting Corps of Engineers spokesperson John Hall); John McQuaid & Mark Schleifstein, Evolving Danger, New Orleans *Times-Picayune*, June 23, 2002, at J12.
[62] Jerry Mitchell, E-Mail Suggests Government Seeking to Blame Groups, Mississippi *Clarion-Ledger*, September 16, 2005, at A1.

also know that the Corps decided to switch to the high level option because it believed that it was the better policy. This switch also responded to broad-scale local public opposition to the barrier option. In any case, the barrier option would not have prevented the flooding in New Orleans even if it had been completed. Neither the barrier nor high level option was designed to protect New Orleans from more than a category 3 hurricane. Moreover, the barrier option, had it been completed, would not have stopped the flooding that occurred along the ship canal.

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An Unnatural Disaster: The Aftermath of Hurricane Katrina

by Member Scholars of the Center for Progressive Reform

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Introduction

The extent of the human tragedy produced by Hurricane Katrina has nearly overwhelmed our ability to comprehend it. In the days immediately following the hurricane, as the full scope of the tragedy revealed itself, Americans began responding as they so often have in the past, with courage in the face of adversity, financial generosity, acts of heroism great and small, and compassion and personal sacrifice.

Amid the outpouring of support for the evacuees and the commitments to rebuild, we have also witnessed a gathering storm of criticism. It is clear even at this early stage that the Hurricane Katrina tragedy is not a "wake-up call," as some have described it; rather, it is a *consequence* of past wake-up calls unheeded. By any reasonable measure, government failed the people of New Orleans. Hurricane Katrina was a natural disaster of enormous proportion, but its tragic consequences have been made even worse by an unnatural disaster – the failure of our government adequately to anticipate, prepare for, and respond to the devastation that the hurricane brought.

One very powerful message of the ideology that now dominates both the executive and legislative branches of the federal government is that actions have consequences. The Katrina tragedy has demonstrated that *inaction* also has serious consequences. When a society fails to protect its most vulnerable citizens – its children, its struggling single mothers, its sick and its elderly – from the forces of nature and a winner-take-all system of economic rewards, consequences inevitably ensue. These consequences are often hidden, either because the connection between governmental inaction and human suffering is difficult to establish or because those who suffer the most are themselves at the margins of society.

In the post-Katrina period, it is vital that those investigating the failure of our emergency management systems and institutions focus on the right questions. To the extent that the inquiries focus solely on examples of individual incompetence, however, there is ample reason to worry that they will not. Focusing on incompetence as the root cause of the problems risks ignoring the underlying conditions that made it easier, perhaps even inevitable, for those public servants to fail. Indeed, the reaction to Katrina may be like the initial reaction to a traffic accident in which a momentarily careless driver crashes into a tree at a curve in the road. Of course, the driver bears responsibility, but it may also be the case

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that the transportation engineers who designed the road with too little banking or too flimsy a guardrail contributed to the severity of the accident, as might the politicians who decided that their favorite pork barrel projects or their desires to give tax cuts to the well-to-do were more important than funding the transportation budget so that the road could be fixed.

New Orleans sat in the path of Katrina like a stretch of road with too little banking and with no one having taken responsibility for its repair. In this case, the government failures that preceded Katrina and made it worse seem to span a wide range of environmental, natural resource, disaster-planning, and emergency-response functions for which we rely upon government. Identifying those systematic and programmatic contributors to the Katrina disaster will give us the information we need to demand that government do better. For too long, government has been neglecting responsibilities that we count on it to bear – for preserving wetlands, eliminating the legacy of hazardous wastes discarded in our communities, anticipating large-scale disasters and taking the appropriate steps to prepare for them, reacting quickly and flexibly with large-scale rescue and recovery operations after such disasters, having systems in place to coordinate governmental responses, and above all, for recognizing that the needs of the least powerful and poorest among us are the special responsibility of government.

The proper response to Hurricane Katrina is *action* at every level of public life to restore the critical protections and safety nets that only government can provide for the people. Government is the means through which society has always sought to meet its larger responsibilities to individuals who cannot adequately protect themselves without some assistance, and to protect the values that bring us together as a people. In examining the manifest failure of government laid bare in Katrina's wake, it is vital that we examine the extent to which the enormity of the disaster was a product of poor policies and decisions, and equally critical that we initiate policy changes and reforms that will enable government to accomplish the tasks that Americans expect and demand of it before and after such events.

This report analyzes key policy decisions, as well as actions and inaction under health, safety, and environmental laws, that could have better protected New Orleans from the effects of Katrina before the hurricane and those that could have improved the emergency response in its wake. In the area of public health, safety, and the environment, the paper explores the implementation of wetlands law and policy, bad decisions regarding the construction and maintenance of the levee system designed to protect New Orleans, pollution prevention and clean-up laws, and energy policy. In the area of emergency response, it reviews policy decisions related to evacuation, shelter, rescue, and relocation. It concludes by examining the overriding issue of how and why poor policy-making and short-sighted planning guaranteed that Katrina visited disproportionate suffering on New Orleanians who were poor and African-American.

Some have begun to argue that the failures of government counsel a course of reducing the responsibilities of government by waiving environmental and worker protections, shielding wrongdoers from liability, and

Table of Contents

relying even more on the private sector. But using the Katrina disaster as an excuse to enact simplistic prescriptions for reducing governmental protections, limiting governmental accountability, and enriching favored business constituencies would be a serious mistake.

Almost a century ago, tragedies like the great Galveston Hurricane of 1900, which killed 6,000 people without warning, and the 1911 Triangle Shirtwaist fire, which killed 146 immigrant female workers locked in a burning building, made it impossible for the privileged few to hide the consequences of a laissez-faire economy. The progressive movement offered an alternative that stressed a positive role for government in fulfilling society's responsibilities to its citizens. Today, government must again play an active role in protecting its citizens from the visibly powerful forces of nature *and* from the less visible, but equally powerful forces of policy-making that is sometimes slanted away from protecting and serving the public and toward protecting profit margins.

In its recently published book, *A New Progressive Agenda for Public Health and the Environment*, the Center for Progressive Reform (CPR) identified a set of principles to guide a modern progressive approach to government. The concluding section of this report revisits those principles, by way of framing the questions that should be the starting point for conceiving and crafting policies by which government can help fulfill our collective responsibility to one another and to our shared environment. The concluding section of this report suggests preliminarily how these principles respond to the governmental failures that are still being uncovered in the aftermath of the storm's devastation. As conservatives often observe, government cannot be the sole vehicle for fulfilling a society's obligations. But Hurricane Katrina reminds us that it must play a prominent role, and that toward that end, its policies must be designed and its structures built so that it can adequately serve the functions expected of it in fair weather and foul alike.

Executive Summary

In the weeks since Hurricane Katrina devastated the Gulf Coast, much attention has been paid to the manifest failure of government rescue efforts. The searing images on Americans' television screens, persisting for days after the storm had passed, demanded as much. But as cleanup and rebuilding commence, a broader view is in order, one focused less on the apparent incompetence and unpreparedness of the government officials charged with managing such emergencies, and more on the failures of policy-making and resource allocation leading up to the disaster. An examination of those failures leads to a simple conclusion: the hurricane could not have been prevented, and some flooding may have been inevitable, but at least some, and perhaps much, of the damage visited upon New Orleans by Hurricane Katrina could have been prevented by wiser public policy choices.

The choices that failed New Orleans are the subject of this report. It examines the environmental decisions that robbed the area around New Orleans of the natural environmental features that might have absorbed floodwaters before they toppled levees. It looks at the policy choices – not merely the incompetence – that resulted in the government's feeble emergency response. It identifies the serious environmental challenges now facing the New Orleans area resulting from environmental policy-making that allowed toxic chemicals to be produced, handled, and stored in such a manner that flooding would loose them on residents. It discusses the effect of energy policy choices on Katrina, as well as the implications of Katrina for future choices. It explores the "environmental justice" lessons to be learned from the Katrina disaster – how environmental policy disfavors poor and minority Americans. It concludes with a series of challenging questions to be examined by investigators and policymakers as they begin the long process of rebuilding and the longer process of reshaping government policy to prevent Katrina-style environmental and policy disasters from compounding natural disasters in the future.

In addition, we strongly recommend that Congress create an independent commission to pursue these questions, in an atmosphere free of the bitter partisan strife that seems to swamp both houses in anticipation of the 2006 mid-term elections. The notion of a bipartisan, objective

congressional investigation, promoted by the President, does not seem possible or desirable given the rancor of recent days.

Historical Roots of the Disaster: Hollow Government and Failed Protection of Public Healthy, Safety, and the Environment

The failure of New Orleans' levees was preceded by a failure of environmental protection and planning. Louisiana's coastal plain contains one of the largest expanses of coastal wetlands in the contiguous United States, but it is being lost at a rate of 6,600 acres per year. The main culprit in wetlands loss in the area is the vast network of levees, navigational channels, and oil-and-gas infrastructure. Important though the network is to safety and commerce, it accelerates coastal land loss by reducing the natural flow of a river's freshwater and sediment to wetland areas where lost land would then naturally be replenished. In addition, the area's major navigational channels pose their own special threat to flood control by sometimes acting as "hurricane highways," allowing storms to sweep inland, past marshland, like liquid bulldozers.

In 1998, state and federal agencies, with the participation of a diverse group of local churches, scientists, environmentalists, and fishermen, developed "Coast 2050: Toward a Sustainable Coastal Louisiana," which offered a host of ecosystem restoration strategies. Its $14 billion price tag pales by comparison to the cost of rebuilding New Orleans, but Coast 2050 was never funded, and the President's 2005 Energy Bill provided only $540 million for Louisiana's coastal restoration over four years. It is time to renew the promise of Coast 2050, completely funding it.

Broken Levees: Predictions That Came True

Over a period of many years, scientists had predicted that a strong storm could breach the levees, and some had predicted what appears to be the precise sequence of breaches that flooded the city. The failure to protect New Orleans resulted from inadequate planning by the Army Corps of Engineers (Corps), and from the failure of the federal government to fund badly needed improvements once those limitations were recognized. Neither the Corps nor Congress adequately accounted for the loss of life and property that would occur if a catastrophic hurricane hit New Orleans. A hurricane protection plan implemented after 1985 by the Corps was designed to protect the city against what roughly corresponds to a fast-moving Category 3 storm. Hurricane Katrina struck the Louisiana/Mississippi coast as a Category 4 storm.

Moreover, although the Mississippi River-Gulf Outlet (MRGO) canal was a primary cause of the flooding, it is seldom used and heavily subsidized by taxpayers. Less than three percent of the New Orleans port's cargo traffic uses the MRGO, less than a ship a day. Although New Orleans' vulnerability was widely predicted, the Corps declined to move forward with enhancements to the levee and floodwall system because "no clear bureaucratic mandate exists for reassessing the blueprints once levees are built." Moreover, when Congress has appropriated money to protect New Orleans better, the Corps has not been in a hurry to get the job done. Finally, the Bush Administration and its predecessors have failed to fund Corps requests.

Toxics in the Air and Water: The Long-term Poisoning of New Orleans

Katrina left a range of serious environmental problems in her wake, including contaminated water; multiple oil spills, typically from above-ground tanks; leaking underground tanks containing fuel and chemicals; flooded sewage treatment plants; and flooded buildings, lagoons, lots, and individual containers containing a wide array of toxic chemicals that were washed out into the ambient environment.

Government officials responsible for removing the floodwaters faced a choice between two environmentally horrid alternatives: they could wait to pump the water out of the city until a mechanism was put in place to remove at least some of the contamination, or they could pump the contaminated water back into Lake Pontchartrain and the Gulf of Mexico. Officials chose to pump the water immediately, and as a result many fish and other water-dependent organisms will die. The pumping will also undo the hard-won success of cleaning up Lake Pontchartrain to the point that portions were recently deemed safe for swimming.

For its part, the Environmental Protection Agency (EPA) has deployed hundreds of workers to the Gulf Coast and is working frantically to test floodwaters, soil, air, and drinking water sources to measure and mitigate risks

to the environment. Although the Agency is currently receiving a "pass through" from the Federal Emergency Management Agency (FEMA) to cover this work, it is not clear how long that form of funding will last. If and when the Agency runs out of external funding, the resulting squeeze could cripple EPA's capacity to do anything but cope with Gulf Coast problems.

Another important question hovers over the entire enterprise: could the environmental damage have been avoided if planning and enforcement had adequately accounted for the inevitable flood that Katrina finally brought? The answer is straightforward: Katrina could not have been stopped, but much of the environmental nightmare could have been.

- The Clean Water Act (CWA) requires the preparation of Spill Prevention Control and Countermeasure Plans by facilities that store petroleum products in above-ground containers. There has not been time to investigate whether adequate plans were in place, but it appears very likely that many of the sources of the spills did not construct adequate containment.
- The Resource Conservation and Recovery Act (RCRA) requires virtually all facilities that manage, store, or dispose of hazardous waste to have emergency plans that prevent the waste from escaping into the environment in the event of an accident, including foreseeable events like a hurricane. It is not yet clear how many of the 21,000 containers EPA picked up in the streets held hazardous wastes, but based on past experience, it is highly likely that many did.
- Finally, there is the troubling question of flooded Superfund sites, with damage that was exacerbated by poor initial cleanups. Reports are that one of three Superfund sites in the path of the hurricane is submerged under water, while the other two were flooded – with their dangerous contents joining the sewage and household hazardous chemicals in the water now being pumped into the Gulf of Mexico and Lake Pontchartrain. These sites should never have been allowed to become toxic, and once they were identified, they should have been cleaned to avoid exactly the outcome Katrina wrought.
- Superfund is also relevant to the cleanup effort, because the statute and the money that funds it are the primary sources for EPA's legal authority and resources to respond to releases of hazardous substances into the environment. Indeed, a disaster on the magnitude of Hurricane Katrina is exactly what Superfund's "emergency removal" provisions were designed to address. Among the sources of revenue for the Superfund toxic waste cleanup program were taxes on the production of crude oil and the manufacture of chemical feedstocks, as well as general tax revenues. Congress allowed the industry taxes that provide the bulk of the program's funding to expire in 1995. Since then, the program has limped along on limited funds from general tax revenues and cost-recovery actions against companies that created the sites. That reduced funding made it difficult for EPA to clean up the three New Orleans-area sites in the first place, and now it will handicap the coming clean-up effort. Democrats in Congress have fought a long and losing battle to persuade their Republican colleagues and the Bush Administration to revive the industry taxes that support the Superfund. That effort may well be renewed in the wake of Katrina.

Implications for Energy Policy

The United States' continued over-reliance on fossil fuels is unwise for several reasons. Katrina highlighted two. First, the over-reliance contributes mightily to global warming, which, according to scientists is increasing the severity of hurricanes, making Katrina-type disasters more likely. The United States has repudiated international efforts to prevent global warming, and is indeed barely willing to admit the problem exists. Second, the policy of over-reliance on fossil fuels invites the types of disruption in energy supplies felt across the nation after Katrina. Congress and the President have declined to enact energy-efficiency legislation that would save money, make industries more competitive, and prevent pollution. Instead, energy policy tilts heavily in favor of increasing the supply of fossil fuels in an effort to keep prices low, despite the threats to people and the environment posed by the use of such fuels.

Emergency Response Planning and Implementation

The consequences of Katrina for anyone left stranded in New Orleans were not only foreseeable; they were foreseen. Among difficulties faced by state and local planners was that more than 100,000 New Orleanians, principally the poor, mostly black residents without cars, together with the elderly, disabled, and infirm, would be unable to evacuate themselves. In the face of this certain knowledge, government officials failed to provide public transportation, leaving tens of thousands of residents to fend for themselves.

Despite ample and clear warnings, the federal government did not even begin seriously to address the situation until 2004. At that time, the Department of Homeland Security (DHS) issued a contract to a consulting firm to develop a better plan. FEMA Director Michael Brown promised to move quickly to polish the plan and move forward. Nevertheless, DHS cut funding for hurricane disaster planning, and according to former FEMA Director Michael Brown, "Money was not available to do the follow up." The federal government also failed to provide any resources to the city or state to fund emergency bus service or provide other means to assist in evacuation. In the absence of any federal help, New Orleans was unable to marshal the resources to implement a public transportation evacuation plan. So when the order to evacuate New Orleans came on August 28, 2005, it was effectively meaningless to tens of thousands of residents without the resources to get out on their own.

FEMA: Skewed Priorities, Cronyism, and Defunding

Since its creation by President Jimmy Carter in 1979 and until this administration, FEMA had been an independent federal agency, eventually enjoying cabinet level status, and focused on providing relief and emergency response services after natural disasters. When DHS was created in the wake of the tragedies of September 11, 2001, FEMA lost its independent status and became one of 22 agencies of the department. The shift has affected FEMA's priorities. DHS emphasizes terrorism at the expense of other threats, so much that in 2005, nearly three of every four grant dollars from DHS to first responders went to programs exclusively focused on terrorism. As Claire Rubin, a Senior Researcher at George Washington University, warned after the reorganization, "a large number of people who are experienced with natural hazards no longer are doing that primarily or at all." Indeed, in May 2003, DHS staged a series of exercises on counter-terrorism and weapons of mass destruction, by chance the same week that hundreds of real-life tornadoes ripped through the Midwest. FEMA personnel who otherwise would have attended to the tornadoes stayed behind to participate in the counter-terrorism drills.

Equally troubling is the Bush Administration's inattentiveness to disaster mitigation, substantially reducing the amount FEMA may spend on such measures.

Moreover, the Bush Administration has worked to apply the principles of small government to FEMA, while introducing privatization and decentralization to emergency management. The President's first FEMA director lamented in Senate testimony that "Federal disaster assistance may have evolved into both an oversized entitlement program and a disincentive to effective State and local risk management," and suggested that certain disaster management responsibilities, such as providing food and shelter to the displaced, should be delegated to faith-based charities. These changes have undoubtedly affected FEMA's preparedness and ability to respond. In March 2004, former FEMA head James Lee Witt testified before Congress that "the ability of our nation to prepare and respond to disasters has been sharply eroded . . . . I hear from emergency managers, local and state leaders and first-responders nearly every day that the FEMA they knew and worked well with has now disappeared."

President Bush's appointments to FEMA have gone to political cronies with little or no disaster-response experience. Patronage appointments are nothing new in Washington, but previous appointments to FEMA have at least had experience in emergency management.

The National Guard: Depleted by the Iraq War and Misused

The National Guard presence in Iraq has taken its toll on the equipment and personnel available to respond to domestic emergencies. By one media account, much of the Louisiana National Guard's most valuable equipment

was in Iraq, and would take months to return, including "[d]ozens of high water vehicles, Humvees, refuelers, and generators." As Lt. Col. Pete Schneider of the Louisiana National Guard said, "The National Guard needs that equipment back home to support the homeland security mission." In addition to the unavailable brigades and equipment, and the toll of wartime duty, the hidden cost of slower deployment to disaster scenes exacerbated the shortfall. It does not appear that the Louisiana Guard was sufficiently mobilized in the days prior to Katrina, so that its ability to respond quickly afterwards was impaired by several days.

The Two Americas: Race, Class, and Injustice

Race, class, and injustice were key dimensions of the failed policies described above. The simple truth is that the devastating effects – the lost lives, the demolished homes, the shattered communities, the affronts to dignity – were suffered disproportionately by people of color and low-income people in New Orleans, where race is an important factor in the spatial layout, particularly in terms of proximity to polluting facilities, access to public amenities, and protection (whether natural or built) from floods. A host of government decisions made long before Katrina had the potential to mitigate or exacerbate the effects of a hurricane for the people of New Orleans. Where government officials chose to forego provision of basic services and protections, they should have been clear on precisely *who* would be left to fend for themselves.

Shifting Responsibility, Shifting Blame

The Bush Administration has endorsed a shift in responsibility for basic health, safety, and environmental protections, working to diminish government's role in assuring even minimally healthful conditions for all, leaving it to those at risk to protect themselves. One effect of this shift is to burden people of color and the poor; because these groups are disproportionately the ones most exposed and most vulnerable, they will be the ones left to fend for themselves.

The Bush Administration has endorsed a shift in responsibility for basic health, safety, and environmental protections, working to diminish government's role in assuring even minimally healthful conditions for all, leaving it to those at risk to protect themselves.

Justice in Cleanup and Rebuilding

The cleanup and rebuilding effort now beginning also raises questions of justice. Community members and environmental justice leaders have raised concerns about when and how the contaminants left by floodwaters will be cleaned up, citing evidence of inequities in environmental cleanups more generally. They and others have also questioned the rush to waive standard health, safety, environmental, and social protections – allowing refineries around the nation to forego Clean Air Act requirements, and allowing federal contractors to pay below the prevailing minimum wage in rebuilding projects. Community members and leaders are also concerned that the reconstruction could be a vehicle for permanently displacing many black residents from the city by way of intensified gentrification, and that people of color and the poor will be left out of important rebuilding decisions.

The Conservative Vision

Many conservatives appear eager to use Katrina as an opportunity to implement a broad conservative agenda that includes deregulation, limits on tort remedies, and evisceration of important environmental safeguards. More generally, some conservatives have reacted to Katrina by advancing the argument that the failure of the government to respond effectively to Katrina is proof of their belief that government is always inept because governmental bureaucracies are by their very nature ineffective. The argument's conclusion is that we need less government – a cruelly ironic message indeed for the citizens of New Orleans whose government abandoned them with so little for so long.

The Progressive Vision

As CPR's book, *A New Progressive Agenda for Public Health and the Environment,* documents, progressive government has made substantial strides in cleaning up our environment. The book sets out a series of fundamental principles that can help guide decision making as we reexamine our policies and priorities in the aftermath of Hurricane Katrina.

Address the Source Not the Victim: Pollution control and cleanup laws and policies that place the burden of avoiding harm on citizens, rather than requiring control by the sources of pollution, are unfair and expose all of us to higher risk in the event of a catastrophe.

Reduce Ignorance / Democracy Demands Disclosure: The many questions about the toxic soup of floodwater and sludge left by the hurricane highlights the vital importance of collection and disclosure of information about potentially hazardous substances produced, used, and stored by a wide array of industries.

Better Safe than Sorry: A precautionary approach to planning and preparation for such emergencies may be both necessary to satisfy the American public's basic moral impulses and a sound investment. Similarly, in evaluating our energy policy, we should employ a precautionary approach that accounts for the contribution of fossil fuels to climate change.

Be Fair: A commitment to improving the well-being of all Americans requires that there be a fair distribution of environmental and other burdens. The planning for and response to Hurricane Katrina, as well as the distribution of risks created by the legal status quo before the Hurricane, placed the most vulnerable of citizens at the highest risk.

Public Resources Belong to Everyone: In the aftermath of Hurricane Katrina, we are reminded of the key role wetlands play in protecting people and property today from storm impacts. Ecosystem services and values like flood control are often overlooked in decisions regarding the fate of natural resources, even under laws that purport to protect the public interest.

Make Government Work: Perhaps no message is clearer in the wake of Hurricane Katrina than this: Government has a vital role to play in protecting life and property from natural and man-made disasters and in helping the recovery from such disasters. But government requires adequate funding and appropriately-structured institutions to perform these critical roles. Those who advocate further weakening of government would either leave us unprotected or turn important functions over to unaccountable private hands. Neither option can safeguard the public.

Key Questions

- The failures of government preparation for and response to Katrina demand thorough, independent, and nonpartisan investigation. This report lays out dozens of questions that should be considered in that effort, extending far beyond questions of basic personnel competence. They include:
- What analysis was performed in reaching the decision not to fully fund Coast 2050? Are there ecosystem restoration initiatives like Coast 2050 in other areas of the country vulnerable to natural or man-made disasters that have gone unfunded but which may help us to avoid catastrophic loss by timely investment?
- Should Congress provide more funding for the construction of channels and floodgates in the levees of the Mississippi River's southern bank that would allow sediment and freshwater to be diverted down into the delta, to restore wetlands? Should Congress fund the construction of a new navigation channel from the Gulf into the Mississippi?
- Given that natural sources of storm protection are currently being destroyed at an unacceptable rate, what changes in our environmental laws and policies are needed to fully account for the value to the public of preservation of these resources?
- Why has the government continued to spend so much money on the relatively useless MRGO Canal, given that it posed such an enormous risk to the city?
- Now that Hurricane Katrina has revealed the inadequacy of the Corps planning, should the system be enhanced to withstand the "worst case scenario" Category 4 or 5 hurricane?
- Did the Corps' cost-benefit approach to addressing the issue of loss of life lead it to downgrade the importance of constructing adequate levees to protect New Orleans or fixing the levee system to offer more protection?
- Katrina caused serious damage to the infrastructure that supports oil and gas production, as well as hundreds of facilities handling significant quantities of hazardous chemicals. How does EPA plan to conduct an independent assessment of the

environmental releases that occurred at such facilities, including air emissions, spills of chemical product and waste, and fires caused by such events?

- What are the protocols for testing drinking water for the broader suite of chemicals likely to have migrated into supplies as a result of the storm and how are federal and state authorities ensuring that such testing gets done?
- How will EPA ensure that the re-habitation of New Orleans, Mississippi, and other areas affected by Katrina is safe in light of remaining toxic deposits in soil and water?
- Is all information relevant to public health and safety being shared with the public in a timely fashion?
- To what extent did the chemical and biological contamination that has been discovered in New Orleans since Katrina result from noncompliance with or inadequate enforcement of the federal environmental laws described above?
- Have the EPA and Congress undertaken the necessary assessment of the funding needed to fully implement and enforce federal environmental laws in order to protect public health and the environment in cases of natural and man-made disasters and reduce potential future cleanup costs?
- A long, intentional, and successful effort to weaken the Superfund program has left it without adequate funds to address the new dimensions of risk posed by Superfund sites that Hurricane Katrina has made apparent. In addition, the aftermath of the hurricane has created need for an emergency response and may produce new sites that warrant cleanup under Superfund. What is the vulnerability of all Superfund sites, including those near water bodies, to natural and man-made disasters? Does EPA have adequate funding to undertake such an assessment? How will EPA and the states deal with the potentially responsible parties who created the sites, and either never stepped forward to pay for cleanup or paid for a remedy that now appears inadequate? Will Congress react quickly to extend the industry taxes that support the Superfund to enable a quick and adequate response to these new challenges as well as NPL sites?
- Do the oil and gas subsidies in the Energy Policy Act of 2005 make sense given high prices and high profits to oil companies? Should Congress reconsider higher fuel efficiency standards for SUVs and similar gas-guzzling and energy-inefficient vehicles, given the problems associated with both high gas prices and the human contributions to climate change?
- What drove the failure of the city and state to have adequate emergency plans? Was it not a priority? Funding constraints? The lack of political power of those left behind? To what extent was the failure of the state and the city to evacuate or successfully shelter the vulnerable population after the storm hit a function of the lack of an adequate plan? The scope of the task? The failure of the federal government to provide quick and effective backup? A failure of coordination?
- Assisted evacuation *before* the storm was clearly the only viable option to ensure the safety of those without the means to get out on their own. Why, once the failure to plan for evacuation forced thousands to remain, did the federal government fail to rescue promptly those left in such deadly circumstances, even though federal officials had known, at least since the Hurricane Pam simulation in 2004, that such a rescue mission would be necessary?

Contact the following CPR scholars and staff for additional information on:

- *Wetlands Policy: Robert R.M. Verchick*
- *Levees: Thomas McGarity and Douglas A. Kysar*
- *Toxic Substances: Robert L. Glicksman*
- *Superfund: Rena Steinzor*
- *Climate Change: David M. Driesen*
- *Energy Policy: Joseph P. Tomain*
- *Evacuation Planning: David J. Gottlieb and Karen Sokol*
- *Shelter Planning: Clifford Rechtschaffen*
- *FEMA & National Guard Response: Christopher Schroeder*
- *Environmental Justice: Catherine A. O'Neill*

- Why did poor, mostly black, residents of New Orleans suffer the most as a result of the emergency planning failures? What measures do all levels of government need to take to ensure that everyone is accorded equal protection from emergencies – regardless of race or income level?
- Should the federal government continue to rely on states and cities to be primarily responsible for emergency planning and response, with FEMA playing only a backup role?
- To what extent were FEMA's problems the result of the emphasis in DHS on responding to threats from terrorists?
- What was the role of cuts to FEMA's budget for hurricane disaster planning?
- What role did the reliance on outsourcing and privatization play?
- What accounts for the failure of the National Guard to provide an effective and rapid back-up to the first responders in New Orleans?
- What steps must be taken to ensure that the poor and people of color have adequate opportunities to participate in the decision making processes associated with rebuilding?

Historical Roots of the Disaster: Hollow Government and Failed Protection of Public Health, Safety, and the Environment

Wetlands Policy and Erosion: Decades of Neglect

Louisiana's coastal plain contains one of the largest expanses of coastal wetlands in the contiguous United States.[1] Sadly, 90 percent of the nation's coastal wetlands *loss* occurs here too.[2] Built by the deltaic processes of the Mississippi River, Louisiana's coastal plain hosts an extraordinary diversity of coastal habitats, ranging from natural levees and beach ridges to large swaths of forested swamps, to freshwater, intermediate, brackish, and saline marshes. These features – which nourish wildlife, filter water, and dampen storm surges – help make the coastal plain, to use the Corps' words, one of "the most productive and important natural assets" in the country.[3]

While most people do not realize it, one of the most important services provided by coastal marshes involves storm protection. Imagine blasting water through a garden hose at full force onto a cement driveway. The water splashes and surges, fanning out in many directions. Now imagine spraying water from the same hose onto a thick, dense lawn. The difference between the cement and the lawn is the difference between a storm path composed of open water and denuded coast and one composed of lush forests and marsh. Louisiana's coastal wetlands act as vast sponges, absorbing billions of gallons of rainfall and shielding people and property from storms. The effect is impressive, even for city dwellers who have never seen a marsh: every two miles of wetlands south of New Orleans reduces tropical storm surges there by half a foot.[4] Louisiana's coastal wetlands and barrier islands also help shield an internationally significant commercial-industrial complex from the destructive forces of storm-driven waves and tides.[5]

In addition to storm protection services, the Louisiana coastal plain also provides numerous other benefits. It offers habitat for countless species, including commercially significant sea life and waterfowl.[6] With more than five million birds wintering in Louisiana, the Louisiana coastal plain provides crucial rest stops to migrating birds.[7] Finally, Louisiana's coastal marshes provide services vital to water quality. The marshes function as giant "water treatment plants," filtering out vast quantities of nitrogen, phosphorous, and other pollutants from incoming water bodies.[8] Taken together, the many services of Louisiana's coastal wetlands make them a treasure every bit as unique and breathtaking as the city of New Orleans itself. The coast's storm protection, habitat, and water treatment services, while impossible to precisely quantify, surely amount to billions of dollars of commercial benefit per year.[9]

The Failures of Wetlands Law and Policy: Bayou Farewell

Unbelievably, this giant of all coastal wetlands, this biotic and commercial treasure, is disappearing before our very eyes. Since the 1930s Louisiana has lost more than 1.2 million acres of coastal wetlands.[10] Today, the Corps believes Louisiana is losing about 6,600 acres per year, a

rate that if unchecked will result in a net loss of 328,000 acres – or an area roughly the size of Rhode Island – by 2050.[11]

Why is this happening? The effect is partly due to natural subsidence: the soft soils of the coastal plain naturally shift and sink over time.[12] But this phenomenon, at best, explains only a small fraction of the loss.[13] The real culprits are human-made: Louisiana's vast network of levees, navigational channels, and oil-and-gas infrastructure. While all of these things are important to safety and commerce, their significant effects on Louisiana's wetlands require intense study, mitigation, and remediation.

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The levee system accelerates coastal land loss by reducing the natural flow of a river's freshwater and sediment to wetland areas where lost land would then naturally be replenished.[14] Instead, that valuable water and sediment is funneled down the Mississippi and shot into the Gulf, toward the outer continental shelf, where the formation of barrier islands is impossible.

Louisiana's coastal plain is crisscrossed with a vast matrix of navigational canals, including ten major navigational channels[15]and literally thousands of smaller access canals serving navigation, allowing oil rig access, and cradling oil and gas pipelines.[16] This network severely disrupts the natural flow of water and nutrients in wetland areas, isolating and starving them.[17] The major navigational channels pose their own special threat to flood control by sometimes acting as "hurricane highways," allowing storms to sweep inland, past marshland, like liquid bulldozers.

In the 1980s, prompted by scientific studies documenting Louisiana's land loss, local groups made up of environmentalists, shrimpers, scientists, and business people began pushing for plans to save what would later be called "America's Wetland."[18] One result of such efforts was the federal Coastal Wetlands Planning, Protection and Restoration Act of 1990 (the "Breaux Act"), which created a federal and state task force to implement wetlands restoration projects with annual funds of around $40 million.[19] Although the projects saved hundreds of acres of wetlands, advocates soon realized that a $40 million program was insufficient. A much more ambitious plan was needed if the coast would ever be saved.

In 1998, state and federal agencies, with the participation of a diverse group of local churches, scientists, environmentalists, and fishermen, developed a book length plan called "Coast 2050: Toward a Sustainable Coastal Louisiana," which offered a host of ecosystem restoration strategies.[20] The underlying principles of the Coast 2050 Plan were to restore or mimic the natural processes that built and maintained coastal Louisiana. The complete plan, to be implemented over the next 50 years carried a price tag of $14 billion, more than twice as much as the Everglades restoration project (nearly $8 billion) and about the same as Boston's new underground highway, "The Big Dig." Though expensive, Coast 2050 actually seemed a bargain, considering the costs of doing nothing threatened to exceed $100 billion in lost jobs, lost infrastructure, lost fishing, and increased hurricane damage.[21]

But Coast 2050 was never funded. In 2004, hamstrung by climbing deficits, the White House demanded, under pressure from the Office of Management and Budget and the Council for Environmental Quality, that the Corps lower its sights and propose a scaled-down 10-year plan that focused only on a few projects that would cost between $1 to 2 billion.[22]

Still, state officials had hopes of securing more funds to restore the wetlands' storm-shielding capabilities. Louisiana Governor Kathleen Blanco pleaded with the federal government to grant her state "just a fraction" of the $5 billion it annually received from oil and gases leases on the outer continental shelf off of Louisiana's coast.[23] Louisiana, of course, never received a greater share of oil and gas royalties for wetlands protection. In the end, it did not even receive the anticipated $1 to 2 billion. The President's 2005 Energy Bill provided only $540 million for Louisiana's coastal restoration over four years.[24] In the wake of the current disaster, it is time to renew the promise of Coast 2050, completely funding it.

Critical Questions
Wetlands Policy and Erosion: Decades of Neglect

Hurricane Katrina has brought to our attention the enormous but often overlooked value of wetlands and how they can help protect us from catastrophic loss. It revealed that our exclusive focus on structural storm protection may have deprived us of complementary, highly effective, and cost-effective ecosystem services. Although current law and policy nominally requires consideration of these and other wetland values, the pace of destruction that we allow belies this mandate. In reality, decisions to allow the destruction of wetlands rarely consider the cumulative effects of wetland loss, and institutional pressures built into our regulatory system tilt the scale in favor of wetlands destruction.[25] Among the critical questions to be investigated further are the following.

- What analysis was performed in reaching the decision not to fully fund Coast 2050?
  - Did the decision making process adequately account for all the values that are relevant to the decision?
  - In light of the Katrina disaster, is the Bush Administration prepared to revisit Coast 2050 as an essential component of the federal contribution to the rebuilding efforts?
- In connection with the New Orleans reconstruction efforts, should Congress:
  - provide more funding for the construction of channels and floodgates in the levees of the Mississippi River's southern bank that would allow sediment and freshwater to be diverted down into the delta, to restore wetlands?
  - fund the construction of a new navigation channel from the Gulf into the Mississippi so ships do not have to enter the river at its three southernmost tips, which could then fill with sediment and nourish coastal wetlands?
- Are there obstacles under current federal law that impede consideration of the full value of non-structural, ecosystem service approaches to storm protection which should be addressed?
  - If so, how can these be removed?
  - If not, how can Congress and the Corps assure that the design and evaluation of improved storm protection for New Orleans and other vulnerable areas adequately considers non-structural components?
- If natural sources of storm protection are currently being destroyed at an unacceptable rate, what changes in our environmental laws and policies are needed to fully account for the value to the public of preservation of these resources?
- Are there ecosystem restoration initiatives like Coast 2050 in other areas of the country vulnerable to natural or man-made disasters that have gone unfunded but which may help us to avoid catastrophic loss by timely investment?

Broken Levees: Predictions That Came True

The failure of the levees in New Orleans was catastrophic for the city and for its most vulnerable citizens. In the aftermath of Hurricane Katrina, it is important to understand why the levees failed and what actions, had they been taken, would have prevented, or reduced, the flooding of New Orleans.

The Facts: Inadequate Levees

The Levee System

New Orleans is protected from Lake Pontchartrain and Lake Borgne, which are located almost side-by-side on the North side of New Orleans, by an interconnected series of levees that extends along the lakes. (A map of the lakes and levees by the *Times Picayune* can be found at http://www.nola.com/hurricane/popup/nolalevees_jpg.html.) These levees are considerably

smaller than the ones that protect New Orleans from flooding of the Mississippi. While the levees on the Mississippi average 25 feet above sea level, these levees range from 13.5 to 18 feet above sea level in height. Another series of somewhat lower levees provides protection to St. Bernard Parish, which is located to the north and east of New Orleans, from Lake Pontchartrain on the north and from Lake Borgne and the Gulf on the east. Parts of the parish are located between the two lakes.

Because New Orleans is below sea level and rapidly sinking, rainwater that flows into the city must be removed not by natural drainage, but with huge pumps that force the water to move along three man-made canals, called "outfall canals," to Lake Pontchartrain. The canals are lined with concrete walls that prevent the water from spilling into the city. Water flowing through the canals is nearly as high as the rooftops of some houses adjoining the canals.[26] All of the levees were built by the Corps and are maintained by various local levee districts.[27]

In addition to the drainage canals, the Corps of Engineers constructed two very large canals that permit ocean-going vessels to move from the Mississippi River through the city to Lake Pontchartrain or the Intracoastal Canal near Lake Borgne. The Industrial Canal slices north/south across the city between the river and the lake at the point where they are closest to each other. The MRGO canal bisects the Industrial Canal and travels east/west to the Intracoastal Canal near Lake Borgne. The shipping canal levees consist primarily of concrete floodwalls and earthen levees.

Why the City Flooded

The water that flooded New Orleans did not flow over the levees situated between the lake and the city. Instead, it appears that the surge flowed up the 17th Street and London Avenue canals and caused one breach of the floodwall along the 17th Street canal and two breaches of the floodwall along the London Avenue canal. In other words, the water moved to the path of least resistance – the floodwalls along the canals.

The city also flooded because the levee system did not protect it from the "end around" exposure that occurred during Hurricane Katrina. The hurricane surge entered Lake Borgne from the Gulf of Mexico and proceeded up the MRGO canal to the Industrial canal in the heart of New Orleans. Hurricane Katrina appears to have destroyed as much as 90 percent of the levees and flood walls along the MRGO canal in St. Bernard Parish as it pushed up the narrowing canal from Lake Borgne to the conjunction of the MRGO canal with the Industrial canal. Colonel Richard Wagenaar, the Corps head engineer for the New Orleans district, reported that the eastern levees were "literally leveled in places."[28] That same surge probably caused the breaches in the floodwalls along the Industrial canal.

We Knew This Would Happen

Not long after the levees broke and water from Lake Pontchartrain on the north and Lake Borgne on the east began to fill New Orleans, President Bush told television correspondent Diane Sawyer that no one could have foreseen the breach of those levees.[29] In fact, over a period of many years, scientists had predicted that a strong storm could also breach the levees. Scientists especially feared that even a relatively weak storm coming from the right direction would push a wall of water into the heart of New Orleans from Lake Borgne through the funnel-shaped MRGO canal and into the Industrial canal, destroying the levees along the canal and flooding much of St. Bernard Parrish and the Lower Ninth Ward. It now appears that this is exactly what happened.[30]

Moreover, the risks posed by the MRGO canal were evident. In 2002, the Corps of Engineers acknowledged that "[t]he MRGO levee is more likely to be affected than the area on the lake itself."[31] Proponents of closing the canal pointed out that, with the erosion of the wetlands in the unleveed stretches south and east of the city, it had "evolved into a shotgun pointed straight at New Orleans."[32]

The Failure to Protect: Bad Planning, Skewed Priorities

The failure to protect New Orleans resulted from inadequate planning by the Corps to save the city, and from the failure of federal government to fund badly needed improvements once those limitations were recognized. Neither the Corps nor Congress adequately accounted for the loss of life and property that would occur if a catastrophic hurricane hit New Orleans.

The hurricane protection plan that was implemented after 1985 by the Corps was designed to protect the city against

the "standard project" hurricane that roughly corresponds to a fast-moving Category 3 storm.[33] Scientists had for years prior to the storm predicted that the levee system could not withstand a Category 4 or Category 5 storm.[34] Hurricane Katrina struck the Louisiana/Mississippi coast as a Category 4 storm.

Moreover, although the MRGO canal was a primary cause of the flooding, it is seldom used and heavily subsidized by taxpayers. The canal, which was completed in 1968, is a deep draft seaway channel that extends for approximately 76 miles east and southeast of New Orleans into Breton Sound and the Gulf of Mexico. It was designed to shorten the distance for ships from the eastern shipping lanes of the Gulf to New Orleans, but it has never lived up to its predicted economic expectations. Less than three percent of the New Orleans port's cargo traffic uses the MRGO; this amounts to less than one ship per day.[35] According to one estimate, the government spends $7 to 8 million dollars per year (about $10,000 for every large vessel that uses the canal) just to maintain the canal.[36]

Although the vulnerability of New Orleans to a catastrophe was well known and widely predicted, the Corps has floundered in its efforts to enhance the protection of New Orleans from Lake Pontchartrain. In an award winning series of articles on the levee system, *The Times-Picayune* concluded that the Corps of Engineers has declined to move forward with enhancements to the levee and floodwall system because "no clear bureaucratic mandate exists for reassessing the blueprints once levees are built."[37] For example, an attempt in 1996 to reevaluate the Lake Pontchartrain levees broke down in disputes over modeling and other bureaucratic disagreements.[38] When Congress has appropriated money to protect New Orleans better, the Corps has not been in a hurry to get the job done. For example, Congress in 1999 appropriated money for a $12 million study to determine how much it would cost to protect New Orleans from a Category 5 hurricane, but the study had not even been launched as of September 2005.[39]

In addition, the Bush Administration has failed to fund Corps requests. Mike Parker, a former Republican Congressman from Mississippi who was until 2002 the chief of the Corps, was forced to resign when he publicly stated to the Senate Budget Committee that the national interest was being harmed by President Bush's proposal to cut over $2 billion from the Corps' $6 billion budget.[40] The Bush Administration rejected an Corps request for $27 million to pay for hurricane protection projects along Lake Pontchartrain and proposed a budget of only $3.7 million. Congress ultimately appropriated $5.7 million for the projects, but the Corps still had to delay seven levee improvement contracts.[41] After Hurricane Katrina struck, Mr. Parker stated that President Bush had not adequately funded improvements to the very levees in New Orleans that had been breached; indeed, Mr. Parker stated that had full funding been authorized "there would be less flooding than you have."[42] An official Corps memo dated May 2005, long after Parker left the agency, seemed to corroborate this possibility. It stated that the Bush Administration's funding levels for fiscal years 2005 and 2006 were not enough to pay for new construction on the New Orleans levees.[43]

There are now strong indications that the critical floodwalls along the outlet canals did not breach because the water surged over them and eroded away their support but because they were not capable of withstanding even the surge of a Category 3 hurricane.[44] Whether this failure of the floodwalls was attributable to poor design or poor construction and maintenance remains to be seen, but in either case the Corps and the local levee authorities bore the responsibility for ensuring that the floodwalls were adequately designed, built, and maintained.

Although it is tempting to blame the current administration for the failure to fund critical levee improvement projects, the truth is that improving the Lake Pontchartrain levees has been a low priority for many administrations, Democratic and Republican, and for Congress. The Bush Administration and Congress have had other priorities over a longer period of time than the last four years. In fact, it seems clear that even the Louisiana congressional delegation has on occasion insisted that the Corps direct its resources to projects like a $194 million project for deepening the Port of Iberia and replacing the lock on the Industrial canal.[45]

The Bush Administration and Congress are influential in setting budget priorities because the Corps is very reluctant to participate in the process of setting priorities for its projects. Moreover, once the Corps has determined that the benefits of a proposed project exceed its costs, the Corps leaves it to Congress to decide through the appropriations process which projects receive funding

and which do not.[46] Congress is ordinarily willing to consider passing appropriations for large public works projects, however, only in the wake of major disasters or after years and years of study.[47]

The Right-Wing's Blame Game

The reasons why New Orleans and its vulnerable citizens were not better protected are clear. The levee system was not designed to protect the city from more than a Category 3 hurricane system and there was little administration or congressional support for making improvements in the levee system despite the fact that its limitations were widely recognized.

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Some conservatives, however, are attempting to tell another story. Not long after the damage to New Orleans became apparent, conservative pundits began a concerted campaign to blame the damage on environmental litigation brought against the Corps in 1976.[48] A House task force has decided to add the litigation to its agenda as it considers reforms for the National Environmental Policy Act (NEPA). And the Bush Administration Justice Department has circulated an email to its attorneys asking for information on any case in which they have defended the Corps from environmental claims involving the levees protecting New Orleans.[49] These claims are wholly unfounded.

In the wake of Hurricane Betsy, which struck in September 1965, Congress authorized a massive hurricane protection improvement effort called the Lake Pontchartrain and Vicinity Hurricane Protection Project (LPVHPP) to provide hurricane protection to the Greater New Orleans metropolitan area.[50] To implement this statute, the Corps studied two major options – the "high level" option and the "barrier" option. The Corps initially chose the barrier option and it prepared an Environmental Impact Statement (EIS) on this option, as it is required to do by the National Environmental Policy Act. The litigation was over the validity of the Corps' EIS. The court held the EIS was inadequate and it enjoined the Corps from proceeding with the barrier option until it fixed the problems in the EIS.

The lawsuit brought by the environmentalists was entirely justified. The court noted, for example, that the Corps' chief engineer for the New Orleans Division had requested further model studies because the studies upon which the draft EIS relied were undertaken more than a decade earlier for an obsolete version of the project.[51] More importantly, the biological analysis undertaken in the final EIS relied entirely on a single telephone conversation with a single marine biologist who was asked to speculate on the impact of the project on marine organisms using the inter-lake flow rates predicted by the obsolete model.[52] Nevertheless, the court would have lifted the injunction as soon as the Corps simply updated the EIS with adequate hydrologic modeling, as requested by its own chief engineer, conducted a more thorough biological assessment, and considered a few reasonable alternatives.

Instead of fixing the EIS, the Corps reevaluated the "high level" alternative and, according to the General Accounting Office, decided to adopt that approach instead because the high level option "would cost less than the barrier plan" and "have fewer detrimental effects on Lake Pontchartrain's environment."[53] One of the factors underlying the changed cost assessment was no doubt the escalating costs of acquiring rights of way from property owners who opposed the barrier project.[54] Another factor that likely influenced the Corps was intense public opposition to the barrier plan from local political officials and local citizens.[55] The high level plan of 1985 was substantially completed prior to Hurricane Katrina and repair and maintenance projects along the levees and floodwalls were ongoing.[56]

Finally, even if the barrier option had been pursued, much of New Orleans still would have been flooded. The barrier plan that the Corps was considering at the time of the litigation would not have prevented the surge from moving from Lake Bourne through the funnel of the MRGO canal into the heart of New Orleans, and it might well have exacerbated that surge. And, as discussed earlier, the project was designed to withstand only a fast-moving Category 3 hurricane.

Critical Questions
Broken Levees: Predictions That Came True

The failure of the levees in New Orleans was predicted. Scientists have warned for years that a strong storm could breach the levees. The reason is simple. The levees were not designed and built to protect the city and its most vulnerable citizens from more than a Category 3 hurricane. Efforts to improve the levees have fallen victim to budget cuts in the Bush Administration and before. The Corps also constructed a little used ship canal through the middle of New Orleans that made the city considerably more vulnerable to the flooding that occurred. These failures raise a number of critical questions:

- The MRGO Canal was a funnel for channeling storm surge from Lake Borgne and the Gulf of Mexico into the heart of New Orleans. Prior to the hurricane, the Bush Administration ordered the Corps to study the option of closing the canal altogether in light of its very low economic benefits, its adverse effects on wetlands, and the threat it posed to the city during hurricanes.[57]
  - Why has the government continued to spend so much money on a relatively useless canal that posed such an enormous risk to the city?
  - Should the rebuilding plan for the City of New Orleans include closing the canal, as the Bush Administration has recently suggested?
  - Should the wetlands south of New Orleans that the canal has destroyed be restored?
- Now that Hurricane Katrina has revealed the inadequacy of the Corps planning, should:
  - the levee system be enhanced to withstand the "worst case scenario" Category 4 or 5 hurricane?
  - the levee system be redesigned to reduce the reliance on floodwalls and enhance the design, construction, and maintenance of the floodwalls that remain?
  - the Corps, whether or not Congress elects to upgrade the levee system, investigate the assumptions underlying the design of the floodwall system along the Intracoastal, MRGO, and outlet canals?
  - the Corps consider a more protective and environmentally sensitive floodgates project for Lake Pontchartrain that also protects Eastern New Orleans and St. Bernard Parish?
- The Corps is very hesitant to spend time and resources reevaluating projects that have already been completed, even when Congress appropriates resources to conduct such studies. Should Congress:
  - require the Corps to prepare systematic reevaluations of some of its most important life-saving projects?
  - provide tools to allow interested parties to stimulate such reevaluations when the Corps appears reluctant to do so?
- According to the Government Accountability Office (GAO), the Corps' guidance (Engineer Regulation 1105-2-100) directs analysts to address the issue of prevention of loss of life when evaluating alternative plans, but they are not required to formally estimate the number of lives saved or lost as a potential effect of a project.[58]
  - In planning to improve hurricane protection for New Orleans, did the Corps take into account the loss of life that would occur in a catastrophic storm like Hurricane Katrina, and how was this done?
  - Did the Corps' approach to addressing the issue of loss of life lead it to downgrade the importance of constructing adequate levees to protect New Orleans or fixing the levee system to offer more protection?

Toxics in the Air and Water: The Long-term Poisoning of New Orleans

Environmental Problems Left in Katrina's Wake

Katrina left nine distinct categories of environmental problems in her wake:

1. flooded and contaminated drinking water supplies;
2. multiple oil spills, typically from above-ground tanks;
3. leaking underground tanks containing fuel and chemicals;
4. flooded sewage treatment plants;
5. flooded buildings, lagoons, lots, and individual containers containing a wide array of toxic chemicals that were washed out into the ambient environment;
6. the concentrated residue of many fires spread into the environment;
7. building debris that is cultivating harmful molds;
8. contaminated sediment and other sludge throughout the city; and
9. toxic exposure of cleanup and other workers as a result of this pollution.

On September 19, 2005, EPA estimated that in Louisiana, 498 of 683 drinking water facilities are operational and meeting EPA standards; 26 are operating on a "boil water notice"; and 159 are either inoperable or their status is unknown.[59] Together, the 683 facilities serve 2.5 million people. In Mississippi, 1,073 of the 1,368 drinking water systems are operational; 231 are operating on a boil water notice; and 64 are either inoperable or their status is unknown. The 1,368 systems serve 3.2 million people. In Alabama, 72 drinking water systems serve approximately 960,000 people. Seventy-one are operational, and one is operating on a boil water notice.

EPA estimates that there were five major oil spills in the New Orleans area to date;[60] one newspaper reported that six spills had occurred.[61] The Coast Guard has estimated that the spills involved 160,000 barrels, and that it has recovered 50,000 barrels to date (a barrel holds 42 gallons).[62] Additional petroleum contamination has resulted from the flooding of an estimated 350,000 vehicles. The Louisiana Department of Environmental Quality reported that oil storage tanks located near the Mississippi River, with a combined capacity of two million barrels, appeared to be leaking.[63] The Coast Guard has estimated that more than seven million gallons of oil may have been spilled from industrial plants, storage depots, and other facilities in southeastern Louisiana as a result of Katrina.[64] These spills have caused as-yet unclear damage to the Gulf and the River.

As for the floodwaters that swept New Orleans and coastal communities in Mississippi and Alabama, the most immediate threat to human health is biological contamination.[65] Experts have likened the bacterial concentrations in the floodwaters to untreated sewage.[66] EPA also stated on September 19, 2005 that *e. coli* levels in flood waters are "greatly elevated" and remain "much higher" than EPA's recommended levels for contact. Those exposed to the bacteria-laden floodwaters could contract diseases such as hepatitis-A and salmonella poisoning.[67] Intestinal diseases can be transmitted by ingesting sewage or simply by being in the water without adequate protective clothing.[68] These risks are particularly acute for children, the elderly, or those with compromised immune systems.

The bacterial contamination that creates these risks of infectious disease resulted in part from damage to sewage treatment plants located in the three states most directly affected by the storm, hundreds of which were damaged or rendered inoperable. Leaking sewage lines added to the problem.[69] The decomposition of dead people and animals contributed still further bacterial contamination to the floodwaters.

The waters covering New Orleans' streets are also contaminated by a range of toxic chemicals,[70] posing significant health and safety risks. Significant amounts of lead, a heavy metal that creates risk of brain damage in young children, have been detected in the floodwaters. At one location, lead was detected at concentrations nearly 700 times higher than EPA standards for safe drinking water.[71] Tests conducted by EPA and the Louisiana Department of Environmental Quality also found high levels of arsenic and hexavalent chromium.[72] Other chemicals discovered in the floodwaters have been a variety of heavy metals and polycyclic aromatic hydrocarbons, all of which have been linked to cancer

risk or developmental problems.[73] Some experts have stated that they would be surprised if continued testing fails to detect unsafe levels of some of these contaminants.[74]

Some of these contaminants came from the kinds of products found in most homes and commercial businesses, such as chemical cleaners, bleach, and pest control products.[75] EPA reports that it has collected 20,934 "orphan" containers with unknown contents – barrels lying in common areas with no apparent owner – throughout the affected region.[76] Others undoubtedly originated from inundated industrial facilities subject to environmental regulatory programs or from sites that managed hazardous chemicals improperly in the past.[77] These problems are daunting, and will take months, even years, to clean up. Chemical contamination in many areas is likely to return existing hazardous waste sites to "imminent endangerment" status, and create brownfield sites that are unsuitable for redevelopment.

Government officials responsible for removing the floodwaters from the city faced a Hobson's choice: they could wait to pump the water out of the city until a mechanism was put in place to remove at least some of the contamination, or they could pump the contaminated water back into Lake Ponchartrain and the Gulf of Mexico. Both the risks that would result from waiting to remove the water until it could be decontaminated and the costs of constructing the necessary bioremediation facilities were deemed unacceptably high.[78] The pumping of floodwater with so much bacterial waste, however, is likely to lower the dissolved oxygen content of the Lake and the Gulf, creating a risk that many fish and other water-dependent organisms will die.[79] Moreover, the intentional discharge of this contamination is a sad sequel to hard-won success in cleaning up Lake Ponchartrain to the point that portions were recently deemed safe for swimming.[80]

EPA has deployed hundreds of workers to the Gulf Coast and is working frantically to test floodwaters, soil, air, and drinking water sources to determine whether they pose unreasonable risks to the environment. When the Agency discovers hazardous conditions, it will face the challenging task of figuring out how to remove, neutralize, or contain the contamination before people return to the area. EPA must also supervise the removal of toxic sludge, containers with unknown contents, toxic debris, and polluted floodwaters. Compounding what is an extraordinarily difficult technical challenge — probably the greatest challenge EPA has ever faced – are the dual political challenges of finding adequate resources for this work and controlling public officials, including the Mayor of New Orleans, from allowing people back into the city too soon.

At the moment, EPA is receiving a "pass through" from FEMA to cover this work, but it is not clear how long that form of funding will last. If and when the Agency runs out of external funding for emergency response, Superfund will be the primary source of funding for its long-term work. As explained further below, that program is starved for resources itself, along with many of the Agency's other programs. President Bush has warned that the nation faces deep budget cuts in domestic programs to pay for Katrina's aftermath, that he will not consider raising taxes under any circumstances, and that we must "stay the course" in Iraq. The funding squeeze these policies will soon cause could cripple EPA's capacity to do anything but cope with Gulf Coast problems.

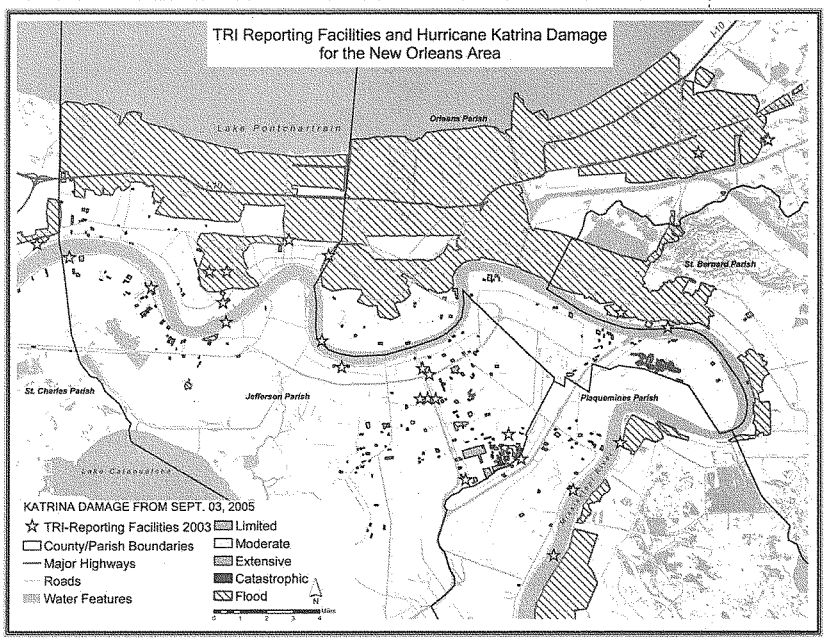
Another important issue is whether any of this environmental damage could have been avoided. Were factories and oil storage facilities located too close to the Coast? Did responsible industries secure them sufficiently in anticipation of a natural disaster that had been predicted for years? Were efforts to clean up toxic waste dumps before the hurricane adequate, or did superficial cleanups leave these dangerous sites vulnerable to the inevitable floods?

Roots and Results of the Disaster: Hollow Government, Weak Enforcement, and the Slow Death of Superfund

The CWA and the RCRA could have prevented the environmental damage caused by Katrina if they had been implemented effectively, and the Superfund statute (know formally as the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA) is critically weakened just when it must play the central role in cleaning up after the disaster.

Prevention

The CWA requires the preparation of Spill Prevention Control and Countermeasure Plans by facilities that store petroleum products in above-ground containers holding



more than minimal amounts. Such plans must include physical containment, as necessary, to prevent oil spills because, among other things, it is a civil and criminal violation of the Act to allow such spills either intentionally or negligently. Although reports of the failure of oil tanks on the Gulf Coast are just emerging, and there has not been time to investigate whether adequate plans were in place, it is highly likely that many of the sources of the spills did not construct adequate containment.

Similarly, the RCRA requires virtually all facilities that manage, store, or dispose of hazardous waste to have emergency plans that prevent the waste from escaping into the environment in the event of an accident, including foreseeable events like a hurricane. It is not yet clear how many of the 20,934 containers EPA picked up in the streets held hazardous wastes, but based on past experience, it is highly likely that many did. (Chemical products are valuable and therefore more carefully secured.) Once again, the aftermath of Katrina must include an investigation of the compliance by New Orleans businesses with these important requirements.

Finally, there is the troubling question of flooded Superfund sites, with damage that was exacerbated by poor initial cleanups. The National Priorities List (NPL) is limited to the 1238 worst abandoned toxic waste sites in the country. There are three NPL sites in the path of the hurricane, and the *Washington Post* reported on September 10, 2005 that one site in the northeast section of New Orleans is submerged in water and that two sites are flooded, with their dangerous contents joining the sewage and household hazardous chemicals in the water that will soon be pumped into the Gulf of Mexico or Lake Pontchartrain.[81] In an interview with CPR, long-time Louisiana environmental consultant Wilma Subra confirmed the accuracy of the *Post* story, as well as the following analysis of its implications.[82]

Agriculture Street Landfill: The 'Black Love Canal'

The site that was the hardest hit by Katrina is the Agriculture Street Landfill, sometimes referred to as the "black Love Canal." The 95-acre site, located three miles south of Lake Pontchartrain in a community that is 60-80 percent African American, is an old municipal landfill where ordinary garbage was mixed together with liquid hazardous waste to a depth of between two and 32.5 feet.[83] In 1969, the City of New Orleans built a low-income housing project on top of the site, as well as the Moton Elementary School.[84] In 1993-94, after community leaders demanded that EPA conduct a full investigation of the site, the Agency decided that contamination at the site warranted an emergency cleanup and placement on the NPL.

In a health assessment prepared for the site by the Agency for Toxic Substances and Disease Registry (ATSDR), a unit of the Centers for Disease Control, experts concluded that the undeveloped portions of the site posed a "public health hazard" and that if the land was ever used for residential housing, exposure to lead, arsenic, and polycyclic aromatic hydrocarbons (PAHs) in the soil could pose an "unacceptable health risk."[85] All of those toxic materials are now floating through the streets of New Orleans.

EPA's choice of a remedy for the site has significantly exacerbated this damage. Instead of excavating the site, treating contaminated soil in situ, or even installing a liner that would prevent the landfill's contents from washing away, EPA decided that its final remedy would be limited excavation of less than two-thirds of the site[86] and the placement of two feet of "clean fill" on top of the buried waste.

Residents asked to be relocated from their housing on top of the site, a project that would have cost approximate $12 million, and have even filed suit demanding that relocation. EPA refused and has instead spent $20 million on the cleanup described above. In desperation, a delegation traveled to Geneva Switzerland in 1999 to ask for help from the U.N. Commission on Human Rights.[87]

Bayou Bonfouca

This 54-acre site located in Slidell, Louisiana, was a wood treatment facility using creosote that operated since the late 1800s. Some 26,000 people live in the community, and the house nearest the site is 400 feet away.[88] Even though the site is supposedly cleaned up, the Louisiana Department of Environmental Quality warns citizens not to swim, and to avoid contact with over seven miles of Bayou Bonfouca, identifying the pollutant of concern as creosote.[89] The ATSDR health assessment concluded that the site is a "public health hazard" and worries that because swimming advisories are "voluntary," the potential for immediate skin burns and long-term illnesses is ongoing.[90] The companies that created the site paid to install a fence around it. EPA then used the site to burn hazardous wastes from another nearby Superfund site, ultimately burying the concentrated ash from that process in Bayou Bonfouca. The only "remedy" installed at Bayou Bonfouca was the construction of a plastic and clay cap over the top of the creosote piles, the remnants of which were likely washed out in the flooding.

Madisonville Creosote Works

This 29-acre site is also a former wood treatment facility.[91] EPA excavated some contaminated soil, treated it, and put it back down at the site. To cope with the thousands of gallons of creosote waste still under the surface, the Agency installed "recovery" trenches beneath the surface that would capture the creosote waste, keeping it out of local drinking water supplies. Flooding is likely to have disrupted those trenches, potentially spreading contamination into the community's water.

Cleanup

The Superfund program covers more than NPL sites. In fact, the statute and the money that funds it are the primary sources for EPA's legal authority and resources to respond to releases of hazardous substances into the environment. Generally, state and local governments cope with small spills and leaks. But a disaster on the magnitude of Hurricane Katrina is exactly what Superfund's "emergency removal" provisions were designed to address.

Among the sources of revenue for the Superfund toxic waste cleanup program were taxes on the production of crude oil and the manufacture of chemical feedstocks, as well as general tax revenues. The industry taxes that provide the bulk of the program's funding expired in 1995. Since the taxes expired, the program has limped along on limited funds from general tax revenues and cost recovery actions against companies that created the

sites.[92] The result of this disastrous set of policies has been to shift a significant share of the burden of financing hazardous substance cleanups away from the industries that generate the bulk of the substances found at contaminated sites and onto the shoulders of the taxpaying public.

The problem goes beyond who pays for site cleanups; the limited funds available in the Superfund may delay cleanups and lead EPA to choose remedies that are not adequately protective of human health. With reduced funding, EPA is hard pressed to clean up sites like the ones described above, and is instead tempted to reduce its expenses by choosing remedies that are temporary and very vulnerable to bad weather along the Gulf Coast. Indeed, the remedies installed at the three sites, all of which are located in prime hurricane territory, were fated to fail, a reality EPA technical experts must have realized.

Democrats in Congress have fought a losing battle to persuade their Republican colleagues and the Bush Administration to revive the industry taxes that support the Superfund. President Clinton faced similar obstacles in the Republican Congress elected the year before the taxes ran out. The industry taxes provided about $1.45 billion in annual funding from 1990-1995.[93] Current levels of general revenue funding are $1.3 billion.[94] The cost of the remediation of toxic waste washed out by Katrina remains to be determined.

Implications for Energy Policy

The death and destruction wrought by Hurricane Katrina should cause us to ask hard questions about why New Orleans and its vulnerable citizens were not better protected. As the previous sections of this report demonstrate, these questions concern not only emergency planning and implementation, but environmental law and policy failures. Katrina also has important implications for this nation's energy policy.

We need to be concerned about current energy polices because these policies make it more likely that there will be disasters like Katrina in the future. Scientists know that burning fossil fuels results in the emission of "greenhouse" gases that trap heat. These increased emissions have warmed the earth's average surface temperature and will continue to do so. This warming has already begun melting glaciers and the polar ice cap. Scientists predict that this melting, along with thermal expansion, will cause sea levels to rise, thereby threatening inundation in many coastal locations. This sea level rise poses an especially great threat to the Gulf Coast.[95] In addition, climate change model results "suggest a shift ... toward extreme hurricanes."[96]

In order to reduce risk of intensifying disasters like Katrina, as well as the other threats posed by climate change, most of the developed world has moved to curb greenhouse gas emissions. Even though the United States emits more greenhouse gases than any other country,[97] the Bush Administration has repudiated the Kyoto Protocol, which embodies this effort. Moreover, the Administration and its Republican allies in Congress have declined to enact energy efficiency legislation that would save us money, make our industries more competitive, and prevent pollution that has produced high asthma rates and is associated with tens of thousands of annual deaths, while decreasing our vulnerability to oil supply disruptions, like the one Katrina produced.

Although global warming is a threat to everyone, experts expect the impact of climate change to fall "disproportionately" on poor persons.[98] Moreover, price spikes caused after hurricanes disrupt oil production and delivery are more than an inconvenience for those struggling to make ends meet. For most families, transportation costs constitute a very significant household expenditure. When gasoline prices rise suddenly, poorer families dependent on automobiles are hit hardest.

Policymakers, government leaders, and academic researchers, concur that continuing to increase fossil fuel use is an unwise energy policy and that concrete measures can be taken to reduce consumption.[99] So do progressive energy firms.[100] The environmental costs of fossil fuel use can be addressed through laws grounded in sustainable development that: are sensitive to environmental consequences; increase energy efficiencies; reduce dependence on fossil fuels; and develop more environmentally benign energy resources,[101] but United States energy law and policy have given little more than lip service to these ideas.[102]

Instead of leading, or at least joining, a world effort to wean ourselves from dependence on fossil fuels, we have chosen to try to keep prices low and to increase supply.

Critical Questions
Toxics in the Air and Water: The Long-term Poisoning of New Orleans

- Katrina caused serious damage to the infrastructure that supports oil and gas production, as well as hundreds of facilities handling significant quantities of hazardous chemicals.
  - How does EPA plan to conduct an independent assessment of the environmental releases that occurred at such facilities, including air emissions, spills of chemical product and waste, and fires caused by such events?
  - What monitoring is being undertaken and what additional monitoring should be planned to adequately determine the nature and extent of hazards to health and environmental contamination?
  - Is information from all appropriate government and non-governmental sources being incorporated into assessment of the releases?
- What are the protocols for testing drinking water for the broader suite of chemicals likely to have migrated into supplies as a result of the storm and how are federal and state authorities ensuring that such testing gets done?
- How will EPA ensure that the re-habitation of New Orleans, Mississippi, and other areas affected by Katrina is safe in light of remaining toxic deposits in soil and water?
- Is all information relevant to public health and safety being shared with the public in a timely fashion?
- To what extent did the chemical and biological contamination that has been discovered in New Orleans since Katrina result from noncompliance with or inadequate enforcement of the federal environmental laws described above?
  - Have the EPA and Congress undertaken the necessary assessment of the funding needed to fully implement and enforce federal environmental laws in order to protect public health and the environment in cases of natural and man-made disasters and reduce potential future cleanup costs?
- Had state and local officials complied with their planning responsibilities under the Emergency Planning and Community Right-to-Know Act, and, if not, did inadequate planning exacerbate the risks to health and safety now facing New Orleans?
- A long, intentional, and successful effort to weaken the Superfund program has left it without adequate funds to address the new dimensions of risk posed by Superfund sites that Hurricane Katrina has made apparent. In addition, the aftermath of the hurricane has created need for an emergency response and may produce new sites that warrant cleanup under Superfund.
  - What is the vulnerability of all Superfund sites, including those near water bodies, to natural and man-made disasters? Does EPA have adequate funding to undertake such an assessment?
  - How will EPA and the states deal with the potentially responsible parties who created the sites in the first place, and either never stepped forward to pay for cleanup, or paid for a remedy that now appears inadequate?
  - What sources of funding will EPA employ in its broader response to the contamination in the wake of the hurricane?
  - Will Congress react quickly to extend the industry taxes that support the Superfund to enable a quick and adequate response to these new challenges as well as NPL sites?

That remedy is attractive because it is immediate, local, manageable, and understandable. By building more refineries, opening federal lands to new oil and gas exploration and extraction, and by subsidizing production where recovery is difficult, oil and gas supplies can be increased and prices will fall, or so we assume. Early responses from the Administration and some members of Congress to price spikes in the wake of Katrina have followed this approach.

We cannot control the forces that influence the price of oil by subsidizing U.S. production of fossil fuels. Demand for fossil fuels is at an all time high and world demand, fueled by economic growth in enormous countries like China and India, is growing.[103] As we exhaust the planet's remaining fossil fuel resources, the cost of exploration and extraction will increase.[104]

Energy policy in the United States tilts heavily in favor of increased reliance on fossil fuels, despite the threats to people and the environment posed by the use of such fuels. Katrina reminds us of one such important risk and of the limited solution provided by a focus on increasing the supply of fossil fuels in an effort to keep prices low. By contributing to global warming, current energy policies increase the risk of more severe coastline flooding, hurricane activity, and price spikes when petroleum supplies are disrupted by hurricanes.

Critical Questions Implications for Energy Policy

- Do the oil and gas subsidies in the Energy Policy Act of 2005 make sense given high prices and high profits to oil companies?
- Should Congress reconsider higher fuel efficiency standards for SUVs and similar gas-guzzling and energy inefficient vehicles, given the problems associated with both high gas prices and the anthropogenic contributions (*i.e.* driving cars and burning fossil fuels) being made to climate change?
- Should the federal government follow the lead of the several states that require the use of renewable portfolio standards (RPSs), which require utilities to distribute a certain percentage of electricity generated by renewable resources, as a means to reduce oil consumption and increase the use of renewable fuels?

Emergency Response Planning and Implementation

The Failures of All Levels of Government to Plan for Emergency Evacuation of All New Orleans Residents

The consequences of Katrina for anyone left stranded in New Orleans were not only foreseeable; they were foreseen. It has been frighteningly apparent since at least 1992, when parts of south Florida were devastated by Hurricane Andrew – the third Category 5 hurricane to strike the continental United States[106] – that New Orleans would be rendered uninhabitable by a storm of similar magnitude.[107] The fact that most of the city is below sea level, together with the environmental and structural factors discussed elsewhere in this paper, mean that it has long been clear what a massive hurricane like Katrina would do: leave New Orleans submerged under 10 to 30 feet of water poisoned by sewage and industrial waste, and consequently without power or drinking water.[108]

Given these conditions, it is not surprising that in early 2001, FEMA ranked a hurricane hitting New Orleans among the top three catastrophic disasters most likely to occur in this country -- along with a terrorist attack on New York City and a strong earthquake in San Francisco.[109] Indeed, before Katrina, various experts predicted that 20,000 to 100,000 people would die in the event of a hurricane in New Orleans.[110] Such high estimated fatalities indicate that planners understood that over 100,000 of New Orleans's residents – disproportionately poor, black, elderly, disabled, or infirm residents – would have great difficulty getting out of the city on their own.

Although the government will not typically receive prior notice before a terrorist attack, there is often at least some advance warning of natural disasters, and of hurricanes in particular. Such notice should provide appropriate government officials with time to take the necessary steps to get people out of harm's way. There was probably no aspect of this calamity that was more accurately predicted and more avoidable with a modest amount of money and effort than the catastrophic consequences of the failure to evacuate residents of the area affected by Katrina. City, state, and federal officials knew that an

evacuation would be required to avoid huge loss of life in the event of a Category 3 or stronger hurricane. Officials also knew that over 100,000 residents did not have access to private automobiles, and that a disproportionately large percentage of these residents were African-American. In the face of this knowledge, government officials failed to provide public transportation, leaving those unable to leave to fend for themselves.

Timeline of an Unnatural Disaster

Some key dates and events provide background for understanding how our policies and support for core governmental functions failed in the emergency response planning and implementation context.[105]

Friday, August 26

- Louisiana Governor Kathleen Blanco declared a state of emergency in the state.
- Gulf Coast states including Louisiana began requesting National Guard support and other federal assistance.

Saturday, August 27

- At the request of Louisiana Governor Kathleen Blanco, President Bush declared a federal state of emergency in Louisiana, specifically authorizing FEMA to coordinate all disaster relief and to identify, mobilize, and provide at its discretion, equipment, and resources necessary to alleviate the impacts of the emergency.

Sunday, August 28

- New Orleans Mayor Nagin ordered the first ever mandatory evacuation of the city.
- President Bush, DHS Secretary Chertoff, and FEMA Director Brown were briefed about the danger of levee failure by the National Hurricane director.

Monday, August 29

- Hurricane Katrina made landfall as a Category 4 storm.
- FEMA Director Brown requested that DHS send 1,000 FEMA employees into the area within two days.
- The 17th Street Canal levee was breached.

State and Local Planning Failures

Both the state of Louisiana and the city of New Orleans had written emergency plans that purported to emphasize hurricane preparedness, particularly evacuation. These plans noted that tens of thousands of the city's residents do not have vehicles,[111] and that many disabled or sick residents would not be able to evacuate on their own.[112] Despite the documented lack of private transportation alternatives for these residents, the plans lacked any concrete provisions committing the government to provide transportation for people unable to evacuate without assistance. The plans are largely premised on evacuation by individuals using their cars.[113] As a recent *Times-Picayune* editorial lamented, state and city "[o]fficial preparations for the storm centered on an evacuation plan designed to hasten the flow of private vehicles out of the city."[114]

The plan apparently assumes that residents unable to evacuate, including many sick, elderly, and disabled residents, would remain behind in shelters—even though the plan itself warns that these may be unsafe and "without sufficient supplies to meet the needs of persons with special considerations."[115] Furthermore, the American Red Cross determined years ago that sheltering in New Orleans was not an acceptable option in the event of a severe storm like Katrina.[116] As a sociologist with the University of New Orleans Center for Hazards Assessment, Response and Technology pointed out in her 2004 article on the need for evacuation assistance by the government: "No shelters within the city would be free of risk from rising water. Because of this threat, the American Red Cross will not open shelters in New Orleans during hurricanes greater than Category 2; staffing them would put employees and volunteers at risk."[117] (And indeed this is precisely what happened during Katrina.) Similarly, Walter Maestri, the Emergency Preparedness Director for Jefferson Parish, told the New Orleans *Times-Picayune* in the summer of 2002:

> Evacuation is what's necessary: evacuation, evacuation, evacuation. . . . We anticipate that (even) with refuges of last resort in place, some 5 (percent) to 10 percent of the individuals who

> remain in the face of catastrophic storms are going to lose their lives.[118]

Louisiana's Emergency Operations Plan assigns parish governments the responsibility in the first instance to instruct persons to leave, to impose traffic controls, to "[m]obilize all transportation resources," and "request assistance from the state as needed."[119] The plan further instructs parishes "to assist in evacuating those residents who do not own vehicles" to shelters outside of the risk area "using school and municipal buses and special purpose vehicles."[120] The plan states that "[s]tate transportation resources will be made available to assist local authorities in transporting special needs persons and persons who do not have their own transportation,"[121] but does not specify how this commitment will be implemented. The plan acknowledges that some people unable to evacuate on their own would therefore be left behind in so-called "last resort refuges" within the risk area.[122]

During Hurricane Georges, which barely missed New Orleans in 1998, *all* of these residents were left behind because no efforts were made to evacuate those who did not own vehicles, and the Superdome endured chaotic conditions.[123] After Georges, the use of public buses to evacuate those without transportation was proposed, but never implemented.[124] When Hurricane Ivan struck New Orleans six years later, those unable to get out of the city on their own were left to face the storm in their homes, the Superdome and other "last resort" shelters, and hospitals.[125]

According to a *Times-Picayune* article published about one month before Katrina, the city's Regional Transit Authority (RTA) has a plan designating 64 buses and 10 lift vans to transport people in the event of a hurricane, but not necessarily out of the city.[126] The RTA spokesperson told the paper that whether people would be taken "out of town or to local shelters would depend on emergency planners' decisions at the moment."[127] Deciding "at the moment," however, proved to be a badly flawed approach to accomplishing evacuation out of the city.

Even though the city had issued a mandatory evacuation order, it nonetheless directed buses to transport people to the Superdome and other "last resort" shelters within the city.[128] And even if the designated 74 buses had been used to take people out of the city, hundreds more would have been necessary to transport everyone to safety.[129] But according to New Orleans Emergency Preparedness Director Joseph Matthews, "we just don't have the resources to take everybody out."[130]

As noted in a *Times-Picayune* article published a little over a month before Katrina hit, apparently the best the city could do for those without transportation was to plan to help produce a DVD featuring the mayor, other local officials, and the city's American Red Cross executive director exhorting those without cars somehow nevertheless to find a way out of the city in the event of a major hurricane.[131] The article concluded that "[c]ity, state and federal emergency officials are preparing to give the poorest of New Orleans' poor a historically blunt message: In the event of a major hurricane, you're on your own."[132]

In sum, well prior to Katrina, local, state, and federal authorities were aware that these local and state plans and the resources necessary to implement them were woefully inadequate. Had they confronted the problem instead of avoiding it, and obtained aid from the federal government in advance, much of the human suffering that occurred in the immediate wake of Katrina could have been avoided.

The Federal Government's Failure to Plan and Provide Resources for Public Evacuation

Despite the ample and clear warnings provided by Hurricanes Georges in 1998, FEMA's 2001 national disaster analysis, and numerous expert predictions about the catastrophic impact a severe hurricane would have on New Orleans,[133] the federal government did not even begin seriously to address the situation until 2004. At that time, DHS issued a contract to a consulting firm, Innovative Emergency Management Company (IEM), for development of a "Southeast Louisiana Catastrophic Hurricane Plan." IEM executed "Stage 1" of the contract, at a cost of over $500,000, during the summer of 2004, by convening a simulation with FEMA, state and local officials, and other critical personnel.[134]

The purpose of the exercise was to create a series of plans that would be presented to the state for adoption as an official hurricane response plan. As numerous articles have reported, the simulation predicted, with disturbing accuracy, the likely impact of a serious

hurricane strike on the city. The initial report of the simulation exercise was designed, in part, to give the federal government the authority to act even without an SOS from state officials. At the close of the exercise, Michael Brown, the Deputy Director for Emergency Preparedness, Louisiana Office of Homeland Security and Emergency Preparedness, stated that over the "next 60 days," the office would polish the action plans and would determine where to focus its efforts in the future.[135]

Any further incentive that government officials might have needed to find a way to plan and fund an evacuation should have been provided by Hurricane Ivan, which hit New Orleans in September 2004. The warnings of Ivan's approach were similar to those that would be issued for Katrina a year later – that a direct hit could send torrents of water over the city's levees. A voluntary evacuation was declared, producing hours-long traffic jams. Those who had automobile transportation and the money to leave did so. Those who did not have the resources stayed. New Orleans Mayor Ray Nagin frankly acknowledged that the city had no way to evacuate the more than 100,000 people without personal transportation: "We can't announce a mandatory evacuation, because we can't deliver it."[136]

Faced with both the simulated and actual rehearsals for the potential catastrophe that was to come, DHS's response was to *cut* funding for hurricane disaster planning. The follow-up conference designed to produce the plan recommended after the 2004 simulation exercise was cancelled. The final report has yet to be released. According to Deputy Director Brown, "*Money was not available to do the follow-up.*"[137] The federal government also failed to provide any resources to the city or state to fund emergency bus service or provide other means (such as water-borne transportation) to assist in evacuation.

On Friday, August 26 – two days before Katrina struck the Gulf Coast – FEMA staffers emphasized the need for the federal government to provide buses to evacuate those without cars. But they were not successful in getting the attention of their supervisors. According to Leo Bosner, an emergency management specialist who has worked for FEMA for 26 years, "We could all see it coming, like a guided missile. We, as staff members of the agency, felt helpless. We knew that major steps need to be taken fast, but, for whatever reasons, they were not taken."[138]

The Consequences of the Planning Failures

In the absence of any federal help, New Orleans was unable to marshal the resources to implement a public transportation evacuation plan. The National Weather Service's bulletin on August 28, warning of Katrina's imminent approach to the city stated:

> Most of the area will be uninhabitable for weeks . . . perhaps longer. . . . Power outages will last for weeks . . . as most power poles will be down and the transformers destroyed. Water shortages *will make human suffering incredible by modern standards.*[139]

In light of this warning, New Orleans's first ever mandatory evacuation order, issued by Mayor Nagin on August 28, was clearly warranted.[140] Those who had automobiles and the financial ability to leave had time to evacuate; the egress routes were made one-way and the auto evacuation, even if slow, did work. But the reason that a mandatory evacuation had never been ordered previously remained: as Mayor Nagin stated after Ivan, the city simply could not "deliver," and, consequently, the order was meaningless to tens of thousands of residents without the resources to get out on their own.[141]

With 28 percent of its residents living below the poverty level – more than twice the national average – New Orleans is one of the country's poorest cities.[142] The overwhelming majority of those living in poverty – and thus without access to a car – are black.[143] Consequently, as many black leaders have highlighted, the various governments' failure to plan for the evacuation of those without the resources to do so on their own made it inevitable that Katrina's victims "were largely black and poor, those who toiled in the background of the tourist havens, living in tumbledown neighborhoods that were long known to be vulnerable to disaster if the levees failed."[144]

Unlike the governmental failures that mark other aspects of this catastrophy – which occurred because of years of neglect, or which might have taken significant amounts of money to remedy – all that was required was the funding to organize the transportation of the city's poorer residents and to explain to residents and responders before the fact how to find each other. This is not an impossible task. The need for large-scale evacuation was well known, but plans were necessary to save the lives

and prevent the suffering of the poor, elderly, disabled, and sick. A humane society anticipates problems and plans for everyone, particularly those least able to fend for themselves. Further investigation is necessary before a complete understanding will emerge of the failures of all three levels of government – municipal, state, and federal – to plan for the evacuation of tens of thousands of New Orleans residents, but it is already apparent that government failed to provide for the needs of the most vulnerable.

Shelter, Rescue and Recovery Planning and Implementation

For those unable to leave, the city declared the Superdome and nine other locations to be shelters of last resort, and directed buses to transport people from designated pick-up points to the shelters.[145] The Superdome proved woefully inadequate to provide protection and support for the nearly 100,000 who could not get out of the city. It lacked adequate pre-positioned supplies, and as Katrina hit the area, the building soon lost power, and consequently air conditioning, and nearly all lighting. In the days to come, the number of refugees at the Superdome the night of the storm swelled to more than 20,000.[146] Seventy percent of the Superdome roof failed, and water poured in during the storm, along with debris.[147] News reports described it as a "filthy, teeming" place, where crowds swelled to 25,000 and "desperate refugees wrapped in sheets, lay in their midst."[148] Some people went without food or water for three or four days. Others died of heat exhaustion waiting for the buses to come.[149] By the end of the third day, the entire building was without running water or functioning toilets.[150] After Katrina struck, the Superdome was surrounded by rising floodwaters.[151]

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Only forty percent of the 53 nursing homes that eventually evacuated residents did so before the storm struck.[152] Among those left behind, over 10,000 patients, medical personnel, and other staff remained at the city's nine hospitals as of Wednesday – all in need of evacuation because the city was entirely without electricity and water.[153] "In the end, withering heat, not floodwaters, proved the deadliest killer, with temperatures soaring to 110 degrees in stifling buildings without enough generator power for air conditioning."[154] Eventually, 154 patients, mostly elderly, died in nursing homes and hospitals waiting.[155] Meantime, from late Monday on, the Marine hospital ship, the U.S.S. Bataan, sat offshore of New Orleans, having happened to be in the Gulf of Mexico when Katrina came ashore.[156] The Bataan, with its six operating rooms and beds for 600 patients, as well as an on board capacity to make 100,000 gallons of fresh water a day, sat empty and unused for three days.[157]

One eyewitness, Dana Lynn, who was at the Superdome until she was evacuated to the Astrodome in Houston on Thursday, September 1, said she had been unable to sleep since she arrived because "every time I close my eyes, I see dead bodies, disgusting water . . . ."[158] Once the lights in the Superdome dimmed and conditions continued to deteriorate, she became increasingly horrified at the prospect of being powerless to protect her three young children.

As the Superdome filled with people trying to escape the rising water in the wake of the storm and increasingly became a health and safety threat, thousands of people elsewhere in the city were evacuated to the convention center, which was also woefully unprepared and understaffed.[159] Its roof, too, was damaged by Katrina; it, too, descended into squalor and chaos. Kay Brown, a 69-year-old who spent an interminable four days at the convention center before finally being evacuated to Houston, did not sleep during her stay there because she was so frightened, and she did her best to avoid going to the bathroom so she would not have to face the filth and smell.[160] Not until Friday, September 2, four days after the hurricane hit and three days after the city was flooded, did National Guard troops secure the center and bring in additional food, water, and medicine.[161] Remarkably, while relief supplies and personnel could not seem to get to the convention center, reporters could.[162]

On Friday, Sept. 2, a large-scale National Guard presence was finally seen in New Orleans. "Thousands of National Guardsmen with food, water and weapons streamed into New Orleans to bring relief to the suffering multitudes and to take back the streets from looters and thugs."[163] The Guard, however, appeared initially reluctant to approach the centers where thousands of people had been waiting.[164] Police held people at the Superdome and the convention center with guns. The Associated Press wrote, "Police point their guns at the crowds and tell them to back off. The people take it as aggression. But when you look into these officers' eyes, there is real fear."[165] One newspaper described the crowd at the Superdome as, "a seething sea of tense, unhappy, people packed shoulder-to-shoulder up to the barricades where heavily armed National Guardsmen stood."[166] Governor Blanco's public comments compounded the tension, when she received significant press for saying that the National Guard, battle-hardened from Iraq, had authority to shoot those who resisted them.[167] She was quoted as saying, "These troops know how to shoot and kill and I expect they will."[168] Shortly after Lt. General Honore arrived to take charge of the National Guard presence, CNN and other news outlets carried video of him ordering Guardsmen to lower their weapons when addressing civilians in the city.[169]

As media reports from the city began to proliferate, one would have expected the federal government to recognize the urgency of the catastrophe that had befallen New Orleans and to act with alacrity. Indeed, that is what city officials were counting on. After the Hurricane Pam simulation, federal officials determined that it might take 48 to 60 hours after such a storm before they could get a large federal presence into the city.[170] According to local officials, the federal government had assured them that they just had to "hang in there for 48 hours and wait for the cavalry," and that was the city's plan.[171] But nothing of the kind occurred. As Jefferson Parish Emergency Management Director Maestri stated to the *Washington Post*, even though city officials had told FEMA before Katrina hit specifically what they would need immediately after the storm – including medical and mortuary units, ice, water, power, and National Guard troops – "we sat here for five days waiting. Nothing!"[172] Not until Friday, September 2 – four days after the hurricane hit and three days after the city was flooded – did National Guard troops secure the convention center and bring in additional food, water, and medicine.[173]

Although the FEMA-IEM simulation made clear that buses would be necessary for evacuation of those left stranded in the city, and although both Louisiana Governor Kathleen Blanco and the city's emergency management director told FEMA after the storm passed that they would need buses to evacuate tens of thousands of people,[174] the agency did not even approve the requisitioning of private bus fleets until two days after the storm, on August 31.[175] That night, Governor Blanco learned that the FEMA-requisitioned buses had just entered the state and were still six hours from New Orleans.[176] In a recent interview, she explained her dismay at the sluggish federal response: "I assumed that FEMA had staged their buses in near proximity. I expected them to be out of the storm's way but accessible in one day's time."[177] That is a fair assumption, given that federal officials not only knew that tens of thousands of people stranded in the city would need rescuing in the event of a major hurricane, but also assured local officials that the federal "cavalry" would be on its way after the storm.

More than a week after the hurricane struck, the National Guard gradually brought order to the situation, and the evacuation of those who were unable to get out gained momentum, first via buses to the Houston Astrodome, and then through an air lift taking the remaining citizens of New Orleans to various localities in Texas and elsewhere.

Institutional Weaknesses and Failures in Implementation

There seems to be little disagreement that the rescue and relocation of the tens of thousands left behind in New Orleans was inadequate, disorganized and slow, without a clear chain of command, and without adequate resources to handle the magnitude of the problems the rescuers confronted. Katrina was not, after all, the "ultra-catastrophe" claimed by DHS Secretary Chertoff as he attempted to defend the federal government's inability to cope effectively in the first days after the hurricane had hit.[178] Scenarios played out by his Department as well as by state and local officials had predicted that the impact of a hurricane of this magnitude on New Orleans would approximate what in fact occurred,[179] although of course those planning scenarios were inaccurate in some respects.[180]

Critical Questions: The Failure of All Levels of Government to Plan for Emergency Evacuation of All New Orleans Residents

Accountability of state and local officials: City and state officials clearly recognized that a large number of people in New Orleans would be unable to leave the city in an evacuation, but the official state and city emergency plans made no meaningful provision for the steps the government would take to evacuate all these persons or provide suitable shelter. In the aftermath of the storm, it became abundantly clear that the state and city failed entirely in both of these efforts. People who could not leave on their own were not given any assistance in leaving, and they were sheltered in circumstances that were inhumane. What accounts for these failures?

- Was the failure of the city and state to have adequate emergency plans a function of the:
  - failure of local and state officials to make the creation of effective plans a high priority?
  - difficulty of creating effective plans due to funding constraints and lack of sufficient experienced personnel?
  - fact that most of those left behind were poor and lacked effective political power to ensure that their neighborhoods received adequate attention and protection?
- Did state and local officials fail to seek appropriate levels of funding to finalize and establish such plans from:
  - local and state sources?
  - the federal government?
- To what extent was the failure of the state and the city to evacuate or successfully shelter the vulnerable population after the storm hit a function of the:
  - failure to have planned adequately for these circumstances?
  - size of the problem having overwhelmed available state and city resources and capacity to respond?
  - failure of the federal government to provide quick and effective backup assistance?
  - failure to coordinate effectively federal, state, and local resources, and what factors, besides the lack of an effective communications system between these groups, accounted for this failure?

Accountability of federal officials: Some of the failures of government are now readily apparent, but this realization has come too late to protect the many residents of New Orleans who were left behind in the evacuation. The inability of many residents of New Orleans to evacuate was well known long before Katrina, as was the potential loss of lives and property that a hurricane like Katrina could cause. Moreover, flaws in the federal, state, and local planning efforts were obvious to anyone who took a close look at these efforts. In our democracy, we depend on our elected leaders to oversee and monitor efforts to protect people. Why did our leaders fail us?

- Legislators have the power to hold hearings and investigate the efforts of the executive branch to implement law and public policy. Did Congress and the Louisiana legislature engage in oversight of efforts to plan for a disaster like Katrina? Why was any such oversight ineffective in holding the White House or the Governor's office accountable for the failure to protect against known risks and contingencies?
- What efforts, if any, were made by the White House and the Louisiana's governor's office to ensure that planning for a disaster like Katrina was adequate to protect vulnerable citizens? In particular:
  - why was White House oversight ineffective in holding DHS accountable for the failure to protect against known risks and contingencies?
  - why was oversight by the Governor's office ineffective in holding state and city planners accountable for the failure to protect against known risks and contingencies?
- Assisted evacuation *before* the storm was clearly the only viable option to ensure the safety of those without the means to get out on their own. Why, once the failure to plan for evacuation forced thousands to remain, did the federal government fail to rescue promptly those left in such deadly circumstances, even though federal officials had known, at least since the FEMA-IEM simulation in 2004, that such a rescue mission would be necessary?

A complex rescue and recovery effort such as that required after a natural disaster or a terrorist attack can fail for several different reasons. The plan itself can be flawed, with planning elements actually incapable of accomplishing what was intended, even if executed flawlessly. Planning must necessarily include some flexibility to cope with the unexpected. Just as military officers say that no battle plan survives the first encounter with the enemy, no rescue plan survives the first encounter with an actual disaster. It must have built in mechanisms for responding flexibly to the facts on the ground as they diverge from the planning scenarios. The essential preparatory steps of training personnel, prepositioning supplies, and ensuring that adequate resources are available to execute the plan can fail. Finally, execution of the plan can fail because of incompetence, inattentiveness, or neglect of duty by people charged with carrying it out.

The shift to Homeland Security has affected FEMA's priorities. While speaking of the department as being dedicated to 'all-hazards preparedness,' Homeland Security in reality emphasized terrorism at the expense of other threats.

The scattered bits of evidence that have emerged to date suggest the New Orleans rescue and recovery effort ran into difficulties at each stage. The remainder of this section describes what we are beginning to learn about the performance of two of the key federal components of the relief effort, FEMA and the National Guard, and then identifies critical questions for further investigation.

FEMA: Skewed Priorities, Cronyism, and Defunding

Skewed Priorities

Since its creation by President Jimmy Carter in 1979 and until this administration, FEMA had been an independent federal agency, eventually enjoying cabinet level status, and focused on providing relief and emergency response services after natural disasters. When DHS was created in the wake of the tragedies of September 11, 2001, FEMA lost its independent status and became one of the 22 agencies that comprise the department.

The shift to Homeland Security has affected FEMA's priorities. While President Bush doubled FEMA's budget in 2002, over half of that allocation was earmarked for responding to terrorist attacks. While speaking of the department as being dedicated to "all-hazards preparedness," DHS in reality emphasized terrorism at the expense of other threats. By 2005, nearly three of every four grant dollars from DHS to first responders are going to programs exclusively focused on terrorism.[181] The GAO called the merger of FEMA and DHS a "high-risk" endeavor for FEMA,[182] and Claire Rubin, a Senior Researcher at George Washington University, warned that after the reorganization, "a large number of people who are experienced with natural hazards no longer are doing that primarily or at all."[183] Perhaps the most glaring example of the new priorities came in May 2003 when DHS staged a series of exercises on counter-terrorism and weapons of mass destruction. The same week of the exercise, hundreds of real-life tornadoes ripped through the Midwest. FEMA personnel who otherwise would have attended to the tornadoes stayed behind to participate in the counter-terrorism drills.[184]

Defunding

Equally troubling is the Bush Administration's inattentiveness to disaster mitigation. FEMA estimates that every dollar spent on mitigating the costs of future disasters saves two dollars in disaster recovery.[185] Yet President Bush has substantially reduced the amount FEMA may spend on such measures. In his first year in office, President Bush eliminated the $25 million a year "Project Impact," which provided mitigation services ranging from home buyouts to early weather warning systems. Shortly thereafter, the President slashed FEMA's "hazard mitigation" grants that were supplied to communities impacted by disasters. Under Clinton era policies, at least 15 percent of money spent on damage recovery was required to be spent on mitigating the damages from future disasters. President Bush cut that mandatory percentage to 7.5 percent. In lieu of these grants, Bush has authorized competitive, pre-disaster, mitigation grants that are awarded based on a cost/benefit analysis, but as one disaster expert warns, such competition denies mitigation grants to poorer communities. In Senate testimony, Dale Shipley, Executive Director of The Ohio Emergency Management Agency, explained that "[i]n a purely competitive grant program, lower income communities, often those most at risk to natural disaster, will not effectively compete with more prosperous cities."[186]

Privatization

President Bush also introduced privatization and decentralization to FEMA. In April 2001, Bush's Budget Director remarked that "the business of government is not to provide services but to make sure that they are provided,"[187] and this philosophy was brought to emergency management. In Senate testimony, then-FEMA Director Joe Allbaugh emphasized "Accountability" and "Responsibility" as the two most important objectives of his directorship. He lamented that "Federal disaster assistance may have evolved into both an oversized entitlement program and a disincentive to effective State and local risk management," and promised to "restore the predominant role of State and local response to most disasters."[188] At the same time, Allbaugh suggested that certain disaster management responsibilities, such as providing food and shelter to the displaced, should be delegated to faith-based charities.[189]

Because of this move towards privatization, FEMA employees are as concerned with keeping their jobs as they are with responding to disasters. "We have to compete for our jobs – we have to prove that we can do it cheaper than a contractor," said one FEMA program administrator,[190] and a disaster expert at Georgia State University warns that by shifting responsibility away from the federal government, FEMA will gradually reduce the nation's preparedness. "Pretty soon governments can't do things because they've given up those capabilities to the private sector. And private corporations don't necessarily maintain those capabilities."[191]

These changes have undoubtedly affected FEMA's preparedness and ability to respond. In March 2004, former FEMA Head James Lee Witt testified before Congress that "the ability of our nation to prepare and respond to disasters has been sharply eroded .... I hear from emergency managers, local and state leaders, and first-responders nearly every day that the FEMA they knew and worked well with has now disappeared."[192] An unnamed current senior FEMA official has been quoted as saying, "It's such an irony, I hate to say it, but we have less capability today than we did on September 11. We are so much less than what we were in 2000 .... We've lost a lot of what we were able to do then."[193]

Cronyism

President Bush's first FEMA director was Joe Allbaugh, the National Campaign Manager for Bush/Cheney 2000. When Allbaugh stepped down in 2003, he was replaced by Michael Brown, who was the Under Secretary in charge of FEMA at the time Katrina hit and for two weeks thereafter.[194] Brown's sole qualification for the job appears to be an old college friendship with Allbaugh.[195] Prior to working at FEMA, Brown was a commissioner with the International Arabian Horse Association (IAHA), a position he was "asked to resign" from after his performance triggered a series of expensive lawsuits.[196] Before his job at IAHA, Brown was an estates and family lawyer.[197] Nor is Brown's lack of qualifications unusual in FEMA's current leadership. Neither of Brown's two top deputies had any professional experience in emergency management; both held high-level positions on President Bush's campaigns for the White House.[198] By September 9, Director Brown was no longer in charge of FEMA's efforts in the Gulf. He was returned to Washington by Secretary Chertoff to resume running the entire agency. On September 12, Brown resigned his position, and R. David Paulison was appointed by President Bush as Interim Under Secretary in charge of FEMA.

FEMA's recent history – deemphasizing natural disaster relief, ignoring vital information, and unqualified leadership – illustrates a pattern of policies and decisions that make us less secure rather than more, draining government of its capacity to perform vital functions by undermining and underfunding critical precautionary programs.

The National Guard: Depleted by the Iraq War and Misused

The Impact of the Iraq War

Four of every ten U.S. military personnel in Iraq have been Guardsmen or Reserves, in "the largest long-term deployment of the nation's reserves in 50 years. And their casualties reflect that."[199] The economic hardship of long-term deployment also is likely to have hurt Guard retention.[200] Similarly, morale in the Guard is threatened.[201] The Guard presence in Iraq has taken its toll in terms of the equipment and personnel available to respond to domestic emergencies as well.[202] Sen. Richard Durbin of Illinois noted that just with respect

to his state's Guard, "Seventy percent of the Illinois Guard either served in Iraq or is serving there, and they leave the major equipment over there for a year; and by that time it's depleted. So our units don't have the supplies and equipment they usually have on hand for a situation like this."[203]

The Guard units that would be most immediately responsible for responding in the wake of Katrina were the Louisiana National Guard. In a story published August 1, 2005, the Los Angeles Times reported that much of the Louisiana National Guard's most valuable equipment was in Iraq, and would take months to return even if released by those using it in Iraq.[204] This included "[d]ozens of high water vehicles, humvees, refuelers, and generators."[205] Lt. Col. Pete Schneider of the Louisiana National Guard said the "National Guard needs that equipment back home to support the homeland security mission." Schneider did say, however, that in the event of a major hurricane, Louisiana could call on Mississippi, Alabama, and Florida for help.[206]

After Katrina hit, "it quickly became apparent that neither [Louisiana nor Mississippi] had sufficient troops or specialized capabilities – from engineering and communications to helicopter squadrons and truck companies – to cope with the human toll the hurricane left in its wake."[207] When Louisiana called on that needed outside aid, the states Schneider mentioned were already responding to their own disasters and were in any event as depleted as was Louisiana. Sens. Kit Bond and Patrick Leahy have estimated that only 34 percent of the Guard's normal allotment of equipment is currently available for use in the United States, with heaviest shortages in trucks, engineering equipment, and communications gear. "We're underequipped," said Lt. Gen. Steven Blum, head of the National Guard Bureau, "we don't need tanks and attack helicopters and artillery, but we must have state-of-the-art radios and communications."[208] "In Louisiana and Mississippi, the states hit hardest by the hurricane, up to 40 percent of their National Guard troops are on active duty in Iraq. As a result, Guard commanders responding to the storm's havoc have been forced to look further afield for military police and other National Guard units and equipment from states as far away as Maryland, stealing precious time from the relief efforts."[209]

Misused and Stretched Thin

In the best of circumstances, the challenges faced by the National Guard in the wake of Hurricane Katrina would have been substantial. But the circumstances in the wake of Hurricane Katrina were not the best. Policies pursued under the Bush Administration have depleted National Guard resources rendering them unavailable to perform essential functions here at home. In addition to the unavailable brigades and equipment, and the toll of wartime duty, the hidden cost of slower deployment to disaster scenes exacerbated the shortfall.

The National Guard is not a rapid deployment organization. Personnel must be called up from their civilian jobs. They must proceed individually to their unit headquarters for equipment and orders, and must then proceed to staging areas where equipment must be assembled and units organized. It does not appear that the Louisiana Guard was sufficiently mobilized in the days prior to Katrina, so that its ability to respond quickly afterwards was impaired by several days. In addition, while the Guard nationwide appears to have sufficient staffing to discharge its domestic responsibilities, the thin base of personnel in the immediate region as well as the lack of equipment meant that units and equipment would have to be called up to come from far greater distances. Little or nor consideration of the time requirements to draw from greater distances appears to have been taken into account in the pre-Katrina decision making.

Prior to the hurricane, Lt. Col. Pete Schneider of the Louisiana National Guard spoke confidently of the Guard's readiness and ability to move after the storm had hit.[210] Once the hurricane had hit, Guard spokespeople continued to talk confidently of the adequacy of the response.[211] Little of this was borne out by events, however, and as the situation deteriorated on several different fronts, the nature of the information coming from the Guard began to change. Although officials typically denied that the deployment of troops to Iraq was interfering with the Guard's ability to respond quickly,[212] on occasion a Guard officer would disagree.[213] Lt. General Blum acknowledged that his force had been stretched thin: "Well, in addition to the 75,000 soldiers that I have overseas in Iraq, in Afghanistan, in Kosovo, and Bosnia, and the Horn of Africa, we have five states that are fighting forest fires in the Northwest, and now we have four states that are dramatically affected by a

Critical Questions
Institutional Weaknesses and Failures in Implementation

Who Does What? In a system of shared governance, all levels of government have a responsibility to serve and protect our citizens. But what role should each play and what does Katrina teach us about the answer to that question?

- Federal planners apparently assumed that state and city first responders would be able to cope with the immediate aftermath of an emergency the size and extent of Katrina. Since it is not realistic to assume these levels of government could provide an effective first response in a situation where an event – whether it is Katrina or a major terrorist attack – will wipe out much of the infrastructure on which first responders depend, why and how did federal planners make this mistake?
- More broadly, what theory of federalism should be used in this area? Storms the size of Katrina, and events like the tragedy of September 11, 2001, are not local events, because they impact the entire county, causing economic and other cascading problems for all Americans. Moreover, all Americans, and rightly so, share the cost of the emergency and the expensive efforts to comfort those affected and help them rebuild their lives and their businesses.
  - In light of these impacts, is it advisable to continue to rely on states and cities to be primarily responsible for emergency planning and response, with FEMA playing only a backup role?
  - If so, shouldn't the federal government, which represents and serves all of the country, be responsible for monitoring and ensuring the competence and adequacy of state and local planning and emergency efforts?

FEMA: Throughout the disaster, FEMA seemed unable to react flexibly, even to the point of preventing volunteer rescue personnel from moving forward in the early days after the hurricane,[219] and being unaware of existing resources like the hospital ship Bataan that could have provided more timely relief. In the first days after the disaster, adequate supplies, personnel, and resources clearly were not available to move into the area in a timely fashion. There are also disturbing reports of lack of situational awareness well into the disaster at the highest levels of FEMA.

- To what extent were the problems at FEMA attributable to:
  - a lack of experience of the FEMA leadership in emergency planning and implementation?
  - the emphasis in DHS on:
    - responding to the consequences of potential threats posed by terrorists?
    - relying on outsourcing and privatization which diverted FEMA employees from emergency planning and implementation and was itself ineffective in providing emergency planning and implementation?
  - decreases in funding for FEMA and for hurricane disaster planning?
  - the loss of experienced FEMA personnel who left the government? Why have so many senior, experienced personnel left FEMA?
  - the management and accountability structure in DHS? Would these problems be solved by make FEMA an independent agency once again?
  - the priority setting process at FEMA and DHS? Having recognized that the flooding of New Orleans was one of the top three worst potential catastrophes facing the United States, why did FEMA fail to act more quickly to follow-up on its "Southwest Louisiana Catastrophic Hurricane Plan"?
- To what extent is FEMA's failure to protect against known risks and contingencies a function of the failure of DHS to effectively integrate FEMA, and to what extent is this failure attributable to the lack of effective White House and congressional oversight?

Critical Questions, Continued Institutional Weaknesses and Failures in Implementation

National Guard: The country has traditionally relied on the National Guard to back up first responders by providing police and logistic support. A significant portion of the nation's National Guard Force, however, is on active duty in Iraq, including up to 40 percent of the Louisiana National Guard, and guard units at home are short of equipment because it has been diverted to Iraq. Available National Guard units in Louisiana were slow to arrive because they had not been mobilized in advance, although the potential for the catastrophe that occurred was widely recognized before the storm hit. Guard units that initially arrived were ineffective at protecting the people left behind or providing them with badly needed food and water. What accounts for the failure of the National Guard to provide an effective and rapid back-up to the first responders in New Orleans?

- To what extent was the failure of the National Guard to act effectively in the initial aftermath of the storm a function of:
  - the failure to mobilize
    - the Louisiana National Guard prior to when the Hurricane struck, and why did this not happen?
    - National Guard troops from other states to back up the Louisiana National Guard, and what factors explain the delays in getting these additional guard units to New Orleans?
  - the failure of the Louisiana National Guard to anticipate the negative impact of reduced troop strength and lack of equipment on the Guard's capacity to respond to emergencies? Were these concerns brought to the attention of the Governor of Louisiana or other state and federal officials?
  - the lack of adequate training of Guard units concerning how to approach and address civilians in the city?
  - the failure of the National Guard to coordinate its activities with local and state officials, first responders, and FEMA, and what factors were responsible for the lack of coordination?

local hurricane or this latest hurricane.'"[214] When asked a few days later why New Orleans had been allowed to become lawless, Blum explained that the Guard had expected the local police to handle that.[215] He emphasized that the National Guard's role was still to help the local police – not to take charge.[216] He also cited limitations of the Emergency Mutual Assistance Compact to explain why it had been difficult to get out-of-state military police into the area.[217]

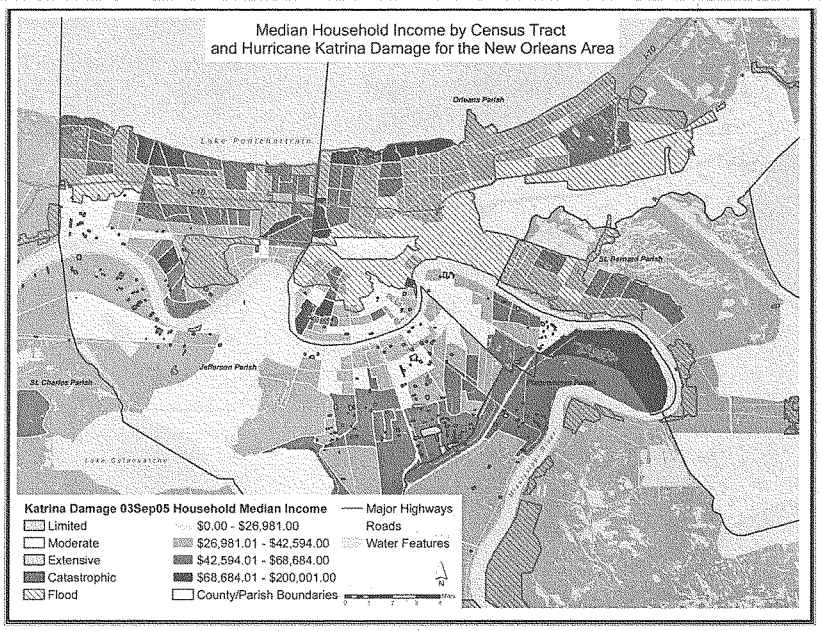
What is more, of the National Guard's 45 brigades, only a handful are considered "enhanced," and those include two from Louisiana and Mississippi in Iraq, said Lawrence Korb, who handled personnel and Guard issues as Assistant Secretary of Defense under President Ronald Reagan. "They had their crack troops there in Iraq. They have the best equipment, the best training," Korb said. "It may be only 30 percent that's over in Iraq, but it's the best 30 percent."[218]

The Two Americas: Race, Class, and Injustice

Earlier sections have described how public health, safety, and environmental policies, on the one hand, and emergency response planning and implementation on the other, fell short and contributed to the devastating effects of Hurricane Katrina. This section highlights how race, class, and injustice were key dimensions of these failed policies. The devastating effects – the lost lives, the demolished homes, the shattered communities, the affronts to dignity – were suffered disproportionately by people of color and low-income people in New Orleans. "Natural disasters" such as hurricanes, earthquakes, and floods are sometimes viewed as "great social equalizers:" they strike unpredictably and at random, affecting black and white, rich and poor, sick and well alike. However, as Katrina has laid bare, the harms are not visited randomly or equally in our society. A reporter for *The New York Times* put it bluntly: "The white people got out. Most of them, anyway. . . . it was mostly black people who were left behind."[220]

Who Was Most Vulnerable

It is society's most vulnerable who were "left behind" by government efforts to assess, to plan for, and to respond to a storm of Katrina's magnitude. And this was predictably so. A host of government decisions were

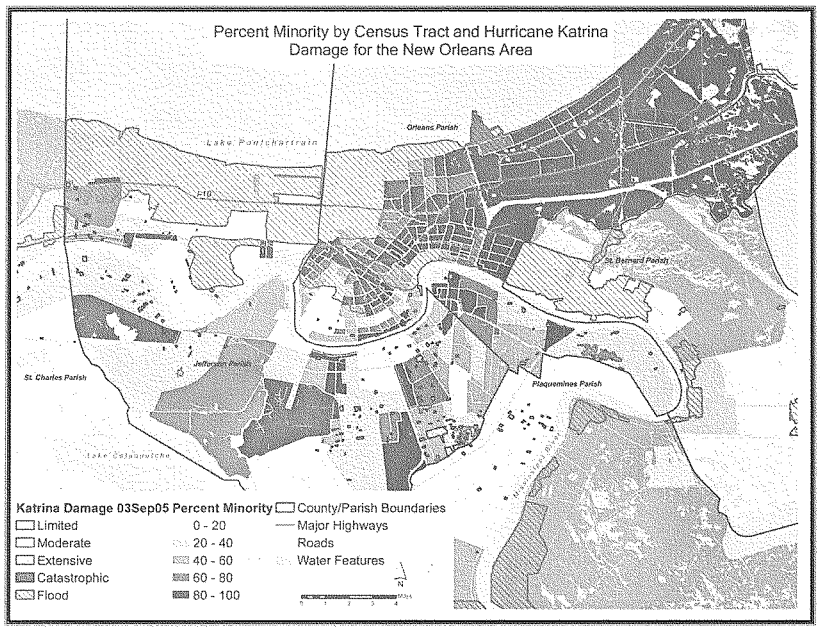


made – each of which had the potential to mitigate or exacerbate the effects of a hurricane for the people of New Orleans – against a social, economic, and political backdrop that made the disproportionate impacts of certain government choices virtually inevitable. Where the choice was to forego the basic services and protections typically provided by a government, it should have been clear to decision makers precisely *who* would be left to fend for themselves.

Twenty-eight percent of people in New Orleans live in poverty.[221] Of these, 84 percent are African-American.[222] Twenty-three percent of people five years and older living in New Orleans are disabled.[223] An estimated 15,000 to 17,000 men, women, and children in the New Orleans area are homeless.[224] The lowest lying areas of New Orleans tend to be populated by those without economic or political resources.[225] The city's Lower Ninth Ward, for example, which was especially hard hit and completely inundated by water, is among its poorest and lowest lying areas.[226] Ninety-eight percent of its residents are African-American.[227] As Craig E. Colten, a geologist at Louisiana State University and an expert on New Orleans' vulnerable topography explains: "[I]n New Orleans, water flows away from money. Those with resources who control where the drainage goes have always chosen to live on the high ground. So the people in the low areas were the hardest hit."[228]

Of the households living in poverty, many have no access to a car: 21,787 of these households without a car are black; 2,606 are white.[229] This lack of access became crucial, given an evacuation plan premised on the ability of people to get in their cars and drive out of New Orleans.[230]

In fact, it is not only the case that government decision makers should have known just who would be left to suffer the harms of protections foregone, but that they did know.[231] Community groups and environmental justice scholars, notably Robert Bullard, founder and



director of the Environmental Justice Resource Center and Ware Professor of Sociology at Clark Atlanta University, have also made clear precisely who would be most at risk.[232] Furthermore, many commentators have noted that the disproportionate impacts experienced by the poor and black communities from Katrina is part of a pattern of environmental disasters in which low-income communities and communities of color are overlooked in the preparations before such disasters occur and receive less rapid assistance afterwards.[233] Previous examples include Hurricane Hugo in 1989 and the Graniteville, South Carolina train crash and release of deadly chlorine gas in 2005.[234]

Race, Class, and Justice: 'Another Case of Government for Some'[235]

Moreover, the fact that the deaths, losses, and indignities of Katrina disproportionately affected people of color and the poor is not at all extraordinary. Hurricane Katrina may be a catastrophic, "once in a lifetime" event. But the same disregard by government health, safety, and environmental agencies for the lives and circumstances of the most vulnerable marks the everyday experience of these people. Indeed, environmental justice advocates have for some time labored to point out that people of color and the poor disproportionately comprise the communities that are overburdened by pollution, underserved by public projects and amenities, and underprotected by government decision makers.[236]

The maldistribution of environmental harms and benefits observed throughout the United States is especially acute

in the Deep South. Robert Bullard, in *Dumping in Dixie: Race, Class, and Environmental Quality*, explains:

> The Deep South is stuck with [a] unique legacy – the legacy of slavery, Jim Crow, and white resistance to equal justice for all. This legacy has also affected the region's ecology. Southerners, black and white, have less education, lower incomes, higher infant mortality rates, and lower life expectancy than Americans elsewhere. . . . Lax enforcement of environmental regulations has left the region's air, water, and land the most industry-befouled in the United States.[237]

Robert Bullard further observes that blacks remain underrepresented in the relevant decision making bodies, including government regulatory agencies. He thus echoes an important claim raised by environmental justice advocates in the South and elsewhere: those affected have often been denied the opportunity meaningfully to participate in decisions affecting their health, safety and environment.[238]

For long-time residents and advocates, then, Katrina highlighted issues that are all too familiar. Damu Smith, Executive Director of the National Black Environmental Justice Network notes that, even before Katrina, impoverished African-Americans were the ones most exposed to environmental harms.[239] In a similar vein, Beverly Wright, director of the Deep South Environmental Justice Center at Xavier University of New Orleans, observed that the government's lack of a plan for responding to Katrina echoes the government's lack of a plan for responding to the "upsets," explosions, and other emergencies that have for years threatened the communities that live at the fence line of Louisiana's polluting facilities – predominantly communities of color and low-income communities.[240]

Within the city of New Orleans, the picture is similar, but includes issues peculiar to urban areas. Robert Bullard sheds light on the racial dimensions of the urban environment in the South:

> Race continues to be a potent variable in explaining the spatial layout of urban areas, including housing patterns, street and highway configurations, commercial development, and industrial facility siting. . . . The differential residential amenities and land uses assigned to black and white residential areas cannot be explained by class alone. For example, poor whites and poor blacks do not have the same opportunities to "vote with their feet." Racial barriers to education, employment, and housing reduce mobility options available to the black underclass and the black middle class.[241]

In New Orleans race is in fact an important variable in understanding the spatial layout in terms of proximity to polluting facilities, access to public amenities, and, as noted above, protection (whether natural or built) from floods. The Agricultural Street Landfill, described above[242] is located in a neighborhood that is 94 percent African-American.[243] As Monique Harden, Co-Director of Advocates for Environmental Human Rights, based in New Orleans, summarizes: "What Katrina has exposed is decades of benign neglect and racism."[244] Katrina has brought to the fore other aspects of injustice as well.

Shifting Responsibility, Shifting Blame

Moves to eviscerate government protection of health, safety, and the environment are most tenable where those burdened can be viewed as "other" or where their circumstances are not lived or imagined by many Americans.[245] The current Bush Administration in particular has endorsed a shift in responsibility for basic health, safety, and environmental protections. It has sought to diminish the government's role in assuring even minimally healthful conditions for all, leaving it to those at risk to protect themselves. The effect of this shift is to burden people of color and the poor – because these groups are disproportionately the ones who are most exposed and most vulnerable, they will be the ones left to fend for themselves.[246] They are also the ones with the fewest resources to do so.

Such "risk avoidance" approaches are sometimes defended by the claim that they will provide the same amount of protection for human life as the alternatives, but at a lower cost. In the case of New Orleans, rather than reduce the risks to the public by, for example, regulating activities that destroyed wetlands and other natural storm protections or funding adequate flood control measures, the government opted to rely on evacuation warnings leaving people to avoid the risks themselves. However, the "same amount" of protection *could not* by this means be provided, given the inability of

so many of New Orleans' residents to evacuate on their own. As noted above, many of those living in poverty have no car, particularly African-Americans. Many of the poorest depend on public assistance checks typically mailed on the first of the month, so have very little money at the end of the month to cover the expenses of gas, a hotel, or food on the road.[247] To these people, a government order to evacuate is hardly a guarantor of safety. Robert Bullard observes: "evacuation, if you don't have a car, a credit card or a place to go, sounds like trading the deep sea you know for the devil you don't."[248]

Government officials tend not to acknowledge publicly the fact that it was impossible for many people to evacuate. Indeed, Michael Brown, the director of FEMA demonstrated his profound ignorance of, or utter disdain for, the circumstances of those unable to leave as he chastised them for "choosing not to heed" the evacuation order.[249] This "blame the victim" strategy is one hallmark of the anti-regulatory agenda of the current administration that is troubling in general and particularly from the perspective of environmental justice.

Government officials tend not to acknowledge publicly the fact that it was impossible for many people to evacuate. This 'blame the victim' strategy is one hallmark of the anti-regulatory agenda of the current administration that is troubling in general and particularly from the perspective of environmental justice.

In a similar vein, on the heels of the government's failure to anticipate the need for and provide the most basic of supplies to the thousands stranded in the Superdome, some government officials and others cast aspersions on those made desperate by the conditions. In so doing, they dehumanized these people, thereby legitimizing the failure to provide for a minimally human existence.

Assessing Risks: Exposure and Vulnerability

Government assessment of the health, safety, and environmental risks appears to have relied on assumptions about people's resources for survival and recovery that simply do not match the reality of New Orleans' poor. Many of these people lack access to health care, have no homeowner's or renter's insurance, and are without savings or other means to survive the loss of even one paycheck. And, Monique Hardin notes, Louisiana has an especially poor history of providing a social and environmental safety net for its citizens.[250]

As environmental justice advocates have pointed out in other contexts, because of people's differing access to resources, an environmental insult of the same intensity may have widely differing effects as between those who are poor and black, and those who are affluent and white.[251] As a consequence, the National Environmental Justice Advisory Council has observed that agencies will get it wrong unless they assess and manage risk in light of a more complete understanding of people's vulnerability to environmental harms.

Justice in Cleanup and Rebuilding

Katrina also raises questions of justice in cleanup and rebuilding. The EPA has begun testing the floodwaters in New Orleans, and has found them to have elevated levels of toxic pollutants such as lead and bacteria such as *e. coli* and coliform. Over 500 sewage plants in Louisiana have been damaged or destroyed.[252] Community members and environmental justice leaders have raised concerns about when and how these contaminants will be cleaned up, citing evidence of inequities in environmental cleanups more generally.[253] They and others have also questioned the rush to waive standard health, safety, environmental, and social protections. While it might have been important to waive normal Clean Water Act permits to allow the waters to be pumped out of a flooded city as quickly as possible, other waivers that are being considered are more questionable.[254]

Community members and leaders are also concerned about efforts to rebuild New Orleans. How will these efforts address homelessness and displacement? How will they address the loss of community and social networks that among other things function as important resources for the city's poor? New Orleans is – or was – 67 percent African-American.[255] Will Katrina be a vehicle for permanently displacing black residents from the city, for intensified gentrification, as is occurring more generally? Will people of color and the poor be involved in important rebuilding decisions? Will they be the ones to get the jobs created by the massive New Deal-style public works programs that could potentially be

Critical Questions
The Two Americas: Race, Class and Injustice

Environmental justice advocates have long worked to bring attention to many of the very issues of race, class, and injustice that were exposed by Hurricane Katrina. Perhaps the most critical question posed by the aftermath of the hurricane is whether we will confront head-on the issues of racial and class inequities. It is people of color and the poor who disproportionately comprise the communities that are overburdened by pollution, underserved by public projects and amenities, and underprotected by government decision makers. And it is people of color and the poor who are largely absent from the relevant decision making processes, having been excluded or ignored despite the fact they are often the ones most affected.

A complete analysis of race, class, and injustice in this context cannot be undertaken in the absence of the voices and perspectives of those affected. CPR cannot and does not purport to speak for these people, and urges decision makers in all quarters to listen as those affected speak for themselves. Questions that warrant further investigation include the following.

- Did the institutional mechanisms for emergency preparedness and response planning systematically generate a response that was certain to have racial and class disparities?
  - If so, what measures must be taken to ensure that everyone is accorded equal protection from emergencies – regardless of race or income level?
  - Was there a racial disparity in the manner and order in which people were evacuated and protected during the critical days after Katrina hit? Anecdotal accounts of such disparities should be investigated.
- Government officials were aware before the storm that evacuation plans failed to provide means to allow evacuation by many residents who were poor and that these plans would leave people of color disproportionately unable to evacuate.
  - Why did these predictions go unaddressed?
  - Is this part of a larger pattern? For example, is there a similar lack of planning for the evacuation of such communities in the shadow of refineries, chemical plants and other industrial facilities in the wake of a facility accident?
- What steps must be taken to ensure that race or class disparities don't affect the cleanup methods selected and used in different areas?
  - What steps are being taken to ensure that the affected communities have adequate opportunities to participate in the relevant decision making processes?
- Widespread public concern has been expressed for assisting the poorest among those adversely affected by the hurricane.
  - To what extent is special attention being given to assisting the poorest of the displaced persons in hiring and other aspects of the reconstruction process?
  - To what extent might other vulnerable groups be disparately impacted in the critical months that follow such a massive dislocation, including farm workers, the disabled, and the elderly?
- Concerns have been expressed about the potential racial and class disparities that could arise from rebuilding efforts.
  - What means exist to enable systematic oversight on these issues?
  - What steps are being taken to ensure that the poor and people of color have adequate opportunities to participate in the decision making processes associated with rebuilding?

developed to address cleanup and rebuilding?[256] Beverly Wright highlights some of these concerns:

> Who will be involved in the rebuilding, and the redesigning of New Orleans? Just before the hurricane, African-Americans, middle class African-Americans, our grassroots people were basically fighting for their life. We were fighting gentrification at a rate we have never seen before. We were fighting the takeover of our public schools.[257]

These concerns do not appear to be misplaced. According to *The Wall Street Journal*, the city's old-line families, many of whom live in the Uptown district, where their homes remain largely intact and unscathed by Katrina, indeed have a particular vision of New Orleans' future –and they have already met with the mayor to begin "mapping out a future for the city".[258]

> The power elite of New Orleans . . . insist the remade city won't simply restore the old order. New Orleans before the flood was burdened by a teeming underclass, substandard schools and a high crime rate. The city has few corporate headquarters.
>
> The new city must be something very different, [James] Reiss says, with better services and fewer poor people. "Those who want to see this city rebuilt want to see it done in a completely different way: demographically, geographically and politically," he says.[259]

It is already clear that the plans for the city's future will be contested.[260] If decisions about that future are to be just, they cannot be made – as so many decisions have been in the past – through processes that exclude New Orleans' people of color and poor.

Moving Forward

Katrina was both a natural and an unnatural disaster. Hurricanes are natural phenomena that will inflict harm and cause damage. The planning and implementation of mitigation efforts to reduce the incidence of such harm and damage are human phenomena, as are the planning and execution of evacuation, rescue and recovery efforts to move people to safety and minimize the loss of life and property. Likewise, the development and implementation of environmental and energy policies that do not worsen the impact of inevitable natural disasters are human choices. These human elements are fundamental obligations of the federal, state and local governments. The preliminary analysis provided in this report suggests that long before August 29, 2005, these elements had been ill-considered, improperly planned, diverted to other purposes, misdirected through short-sighted decisions, neglected in favor of other less vital priorities, under-funded, under-equipped, and under-staffed. As a result, long before Katrina caused the levees to fail, government appears to have failed. This report highlights some of these apparent failures and urges careful investigation and a renewed commitment to an investment in the common good.

As this report has stressed throughout, it is too early to reach definitive conclusions about the lessons we can learn in the wake of this tragedy. However, certain preliminary assessments are warranted, and it is not too early to consider the vision that ought to guide our response to these events.

The Conservative Vision

For many conservatives, Katrina seems to present an opportunity to implement an agenda that includes deregulation and limiting tort remedies.[261] The Senate Environment and Public Works Committee, for example, is considering legislation that would suspend any law governing air, water or land in any state that is responding to the hurricane, thereby authorizing EPA to grant waivers in states located far from the storm on the pretense that hurricane relief efforts make this necessary.[262] Conservatives also want to pass legislation to expand oil and gas drilling on public lands, including the Alaska National Wildlife Refuge, remove offshore drilling bans, shift the primary responsibility for permitting new oil refineries from EPA to DOE, and otherwise providing a series of exemptions for refineries from the Clean Air Act.[263] In addition, oil refineries have revised their efforts to obtain liability protection for producing the fuel additive MTBE that was dropped from the energy bill Congress passed because of the opposition of cities with contaminated water supplies.[264] Conservatives have also redoubled their efforts to amend and weaken NEPA because, they claim, environmental litigation under NEPA is responsible for the failure of the Corps to finish engineering projects that would have

better protected New Orleans from flooding, although, as shown earlier, these claims are entirely specious.[265]

Other items on the conservative agenda extend beyond the issues discussed in this report, although they fit the same pattern. Conservatives are using Katrina, for example, to adopt measures that advance their economic agenda, such as school vouchers and repeal of labor laws.[266] The White House, for its part, was quick to suspend a law that requires employers to pay the locally prevailing wage to construction workers on federally financed projects, even though this adversely impacts workers who lived in the very areas that were destroyed.[267]

Conservatives have reacted to Katrina in one more way. They interpret the failure of the government to respond effectively to Katrina as proof of their belief that government is always inept because governmental bureaucracies are by their very nature ineffective. David Brooks, for example, observes there is a "paradox at the heart of the Katrina disaster, which is that we really need government in times like this, but government is extremely limited in what it can effectively do."[268] This argument, as Albert Hirschman has demonstrated, is a staple of the conservative movement. For two hundred years, Hirschman notes, conservatives have sought to head off progressive government by arguing such efforts are futile.[269] If a program fails, conservatives are quick to assume that this is proof that government cannot work. As Hirschman notes, "There is a rush to judgment and no allowance is made for social learning or for incremental, corrective policy-making."[270]

The Progressive Vision

From a progressive perspective, the lesson that Katrina teaches is that we must redouble efforts for better government. The kind of planning and execution demanded by a disaster like Katrina simply cannot be carried out without competent government that is adequately funded, has its eyes on the proper priorities and is genuinely concerned with the public good and the empowerment of all citizens. CPR's *A New Progressive Agenda for Public Health and the Environment* documents how progressive government has made substantial strides in cleaning up the air and water, ensuring that the application of pesticides does not adversely affect human health or the environment, creating workplaces free from occupational illnesses and accidents, reducing hazardous waste management practices, preventing the marketing of dangerous toxic chemicals, halting the use of environmentally destructive surface mining practices, accelerating the cleanup of hazardous substances that have been released into the environment, and reducing injuries and fatalities from automobile accidents and dangerous products.[271] While there is much still be done in these areas and others, no one can seriously doubt that the country is better off than it was in the 1950s when the country had only a few government programs to address these dangers. What the conservative "futility" argument conveniently overlooks is the accomplishments of progressive government. When adequately funded and led, the bureaucracy much maligned by conservatives has an admirable track record in protecting the public.

A New Progressive Agenda for Public Health and the Environment sets out a series of fundamental principles that animate a vision of the positive and vital role of government. These principles can help guide decision making as we reexamine our policies and priorities in the aftermath of Hurricane Katrina.

Among these principles are:

Address the Source Not the Victim: Pollution control and cleanup laws and policies that place the burden of avoiding harm on citizens, rather than requiring control by the sources of pollution, are unfair and expose all of us to higher risk in the event of a catastrophe. We all benefit if government takes seriously its duty to protect the public from harm instead of shifting the burden to the individuals most affected, in the emergency planning and response context, as well as in health and environmental regulation.

Reduce Ignorance / Democracy Demands Disclosure: The many questions about the toxic soup of floodwater and sludge left by the hurricane highlights the vital importance of collection and disclosure of information about potentially hazardous substances produced, used, and stored by a wide array of industries.

Better Safe than Sorry: Before August 2005, the risk to New Orleans posed by a Category 4 or 5 storm could be expressed statistically, but whether it would happen, and if so when, could not be predicted with certainty. A precautionary approach to planning and preparation for such emergencies may be both necessary to satisfy the American public's basic moral impulses and a sound

investment. Similarly, in evaluating our energy policy, we should employ a precautionary approach that accounts for the contribution of fossil fuels to climate change.

Be Fair: A commitment to improving the well-being of all Americans requires that there be a fair distribution of environmental and other burdens. The planning for and response to Hurricane Katrina, as well as the distribution of risks created by the legal status quo before the Hurricane, placed the most vulnerable of citizens at the highest risk. The widespread outrage over the failures of the evacuation and emergency response suggests that Americans are committed to a legal status quo that takes greater account of fundamental fairness.

Public Resources Belong to Everyone: American law and society have long recognized the public interest in natural resources such as wetlands. In addition to concern for the value of these resources for future generations, in the aftermath of Hurricane Katrina, we are reminded of the key role wetlands play in protecting people and property from storm impacts today. Ecosystem services and values like flood control are often overlooked in decisions regarding the fate of natural resources, even under laws that purport to protect the public interest. We must improve our policies to better assure that the public interest is fully assessed in relevant decisions.

Make Government Work: Perhaps no message is clearer in the wake of Hurricane Katrina. Government has a vital role to play in protecting life and property from natural and man-made disasters and in helping the recovery from such disasters. But government requires adequate funding and appropriately structured institutions to perform these critical roles. Those who advocate further weakening of government would either leave us unprotected or turn important functions over to unaccountable private hands. Neither option can safeguard the public.

A critically important element of the response to Hurricane Katrina notably absent from the conservative agenda is an independent and impartial investigation of how government failed to protect New Orleans and its most vulnerable citizens.[272] As this report demonstrates, many important questions have arisen concerning both the events leading up to Katrina and the government's reaction afterward. Since key questions involve failures on the part of the White House, an investigation controlled by Republicans is unlikely to be credible. The appointment of independent and national commission similar to the 9/11 Commission is important for another reason. This "unnatural disaster" appears to have many complicated causes. An investigation that focuses only on emergency response planning and implementation will not tell us everything we need to know. As this report demonstrates, other important issues concern the implementation of wetlands and Superfund law and policy. A job of this scope is best handled by a group similar to the 9/11 Commission.

The governmental failures revealed by Katrina are not the failures of a progressive government. While we do not yet understand exactly what went wrong, the evidence assembled here makes this much clear: some of the needless death and destruction in New Orleans is attributable to a rejection of progressive principles and to a hollowing out of the government that left it without the resources and experienced personnel needed to fulfill its vital role of protecting people and the environment.

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An Unnatural Disaster: The Aftermath of Hurricane Katrina is a collaborative effort of the following member scholars and staff of the Center for Progressive Reform.

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Notes

[1] Twenty-five percent of the nation's coastal wetlands reside in southern Louisiana. MIKE TIDWELL, BAYOU BLUES: THE RICH LIFE AND TRAGIC DEATH OF LOUISIANA'S CAJUN COAST 6 (2003).

[2] U.S. ARMY CORPS OF ENG'RS, 1 LOUISIANA COASTAL AREA (LCA), LOUISIANA: ECOSYSTEM RESTORATION STUDY, FINAL § 1.1 (Nov. 2004), *available at* <http://www.lca.gov/final/main_report1.aspx>.

[3] *Id.*

[4] Sydney Blumenthal, *No One Can Say They Didn't See It Coming*, SALON, Aug. 31, 2005, *available at* <http://www.salon.com/opinion/blumenthal/2005/08/31/disaster_preparation/> (last visited Sept. 21, 2005).

[5] U.S. ARMY CORPS OF ENG'RS, *supra* note 2, at § 1.1. A complex of deep-draft ports, including the Port of South Louisiana, handles more tonnage than any other port in the Nation. *Id.* Five years ago, "Louisiana led the Nation with production of 592 million barrels of oil and condensate (including the outer continental shelf), valued at $17 billion, and was second in the Nation in natural gas production with $1.3 billion (excluding the outer continental shelf)." *Id.* In addition, more than 29% of the country's crude oil supply and nearly 34% of its natural gas supply moves through Louisiana, which, incidentally, also hosts about half of the nation's refining capacity. *Id.* This relationship helps explain the dramatic surges in fuel prices that immediately followed Katrina.

[6] Fisheries in the Gulf of Mexico provide about 20% of all seafood consumed in the United States. Nearly all of that catch is dependent, in some way, on the universe of microscopic plant and animal life first nurtured in the Louisiana Coastal Plain. Oliver A. Houck, *Land Loss in Coastal Louisiana: Causes, Consequences, and Remedies*, 58 TUL. L. REV. 3, 84-86 (1983).

[7] About 70% of all birds that migrate through the United States use the Mississippi and Central flyways. U.S. ARMY CORPS OF ENG'RS, *supra* note 2, at § 1.1. The coastal plain also supports several endangered or previously endangered species, including bald eagles, brown pelicans, alligators, and various kinds of whales. Houck, *supra* note 6, at 90. The birdlife moving through southern Louisiana supports significant commercial enterprises, including tourism, birding, and hunting. Houck, *supra* note 6, at 88-90.

[8] *Id.* at 78-79. The marshes' natural store of fresh water also acts as a bulwark against intruding salt water, which, were it allowed to flow uninhibited up the bayous, would destroy crucial shellfish habitat and poison groundwater supplies south of New Orleans. *Id.* at 80-81.

[9] *Id.* at 99 (estimating an annual value of around $10 billion in 1983, using two different valuation methods).

[10] U.S. ARMY CORPS OF ENG'RS, *supra* note 2, at iii. In the 1970s, Louisiana was losing an estimated 25,200 acres per year from a combination of natural and human process. *Id.* From 1990 to 2000, the rate slowed to 15,300 acres per year. *Id.*

[11] *Id.* That loss would represent ten percent of Louisiana's remaining coastal plain. *Id.*

[12] *Id.* § 2.1.1.4.

[13] Houck, *supra* note 6, at 15.

[14] U.S. ARMY CORPS OF ENG'RS, *supra* note 2, § 2.1.1.4.

[15] *Id.* § 2.1.2.2.

[16] Hydraulic forces erode the banks of such canals, causing them to widen at sometimes alarming rates. The surface area of the coast's artificial waterways may, itself, account for "two to four percent of [the coast's] total land mass." Houck, *supra* note 6, at 37.

[17] *Id.* at 39-40.

[18] *See* TIDWELL, *supra* note 1, at 131-32.

[19] The projects included restoring wetlands near New Orleans with mechanical pumps, shoring up the eroding coast of Cameron Parish, and revitalizing beaches on select barrier islands. *Id.* at 132-33.

[20] TIDWELL, *supra* note 1, at 134.

[21] *Id.* at 134.

[22] Mark Schleifstein, *Corps Seeks Help to Scale Down Plan*, TIMES-PICAYUNE (New Orleans), Apr. 10, 2004. Money was not the only thing siphoned off from Louisiana's coastal restoration efforts. In the spring of 2004, New Orleans's *Times-Picayune* reported that Army Corps officials involved in restoring Louisiana's wetlands had "been sent to assist those fighting in and rebuilding Iraq, including oversight of a similar wetlands restoration project there" at the mouth of the Tigris and Euphrates River. *Id.*

[23] Kathleen Babineaux Blanco, *Saving America's Wetland*, WASH. POST, Dec. 8, 2004, at A31 (op-ed).

[24] Michael Scherer, *Bush Fought Funding in Energy Bill for Gulf Coast Protection*, SALON, Sept. 1, 2005 available at <http://www.salon.com/news/feature/2005/09/01/against_funding/> (last visited Sept. 21, 2005).

[25] See Alyson C. Flournoy, *Section 404 at Thirty-Something: A Program in Search of a Policy*, 55 ALA. L. REV. 607, 644 (2004).

[26] Graphic, *First Line of Defense: Hoping the Levees Hold*, TIMES-PICAYUNE (New Orleans), *available at* <http://www.nola.com/hurricane/popup/nolalevees_jpg.html>.

[27] *Id.*

[28] Ralph Vartabedian, *Much Wider Damage to Levees Is Disclosed*, L.A. TIMES, Sept. 13, 2005, *available at* <http://www.latimes.com/news/nationworld/nation/la-na-corps13sep13,0,5962987.story?coll=la-home-headlines> (last visited Sept. 21, 2005).

[29] Dan Froomkin, *White House Briefing: A Dearth of Answers*, WASH. POST, Sept. 1, 2005, *available at* <http://www.washingtonpost.com/wp-dyn/content/blog/2005/09/01/BL2005090100915.html?nav=rss_politics> (last visited Sept. 21, 2005).

[30] Michael Grunwald, *Canal May Have Worsened City's Flooding*, WASH. POST, Sept. 14, 2005, at A21.

[31] Jerry Mitchell, *E-Mail Suggests Government Seeking to Blame Groups*, CLARION-LEDGER (Miss.), Sept. 16, 2005, at A1, *available at available at* <http://www.clarionledger.com/apps/pbcs.dll/article?AID=/20050916/NEWS0110/509160369/1260> (last visited Sept. 21, 2005) (quoting Corps of Engineers spokesperson John Hall); John McQuaid & Mark Schleifstein, *Evolving Danger*, TIMES-PICAYUNE (New Orleans), June 23, 2002, at J12.

[32] McQuaid & Schleifstein, Evolving Danger, *supra* note 31.

[33] Mitchell, *supra* note 31; McQuaid & Schleifstein, Evolving Danger, *supra* note 31.

[34] Mitchell, *supra* note 31; McQuaid & Schleifstein, Evolving Danger, *supra* note 31.

[35] Grunwald, *supra* note 30.

[36] LAKE PONTCHARTRAIN BASIN FOUND., MARTELLO CASTLE WETMAAP, *Background Information*, *available at* <http://wetmaap.org/Martello_Castle/Supplement/mc_background.html>.

[37] McQuaid & Schleifstein, Evolving Danger, *supra* note 31.

[38] *Id.*

[39] Andrew Martin & Andrew Zajac, *Corps: Lack of Funds Did Not Contribute to Flooding*, CHI. TRIB., Sept. 2, 2005, at 1.

[40] John McQuaid & Mark Schleifstein, *Shifting Tides*, TIMES-PICAYUNE (New Orleans), June 26, 2002, at 14.

[41] Andrew Martin & Andrew Zajac, *Flood-Control Funds Short of Requests*, CHI. TRIB., Sept. 1, 2005, at 7.

[42] *Id.*

[43] Reuters, Andy Sullivan, *Budget Cuts Delayed New Orleans Flood Control Work*, Sept. 1 2005, *available at* <http://www.alertnet.org/thenews/newsdesk/N01279059.htm> (last visited Sept. 21, 2005).

[44] Michael Grunwald & Susan B. Glasser, *Experts Say Faulty Levees Caused Much of Flooding*, WASH. POST, Sept. 21, 2005, at A1.

[45] Michael Grunwald, *Money Flowed to Questionable Projects*, WASH. POST, Sept. 8, 2005, at A1.

[46] *Id.*

[47] McQuaid & Schleifstein, *supra* note 31.

[48] *See, e.g.*, R. Emmett Tyrell, Jr., *Eco-Catastrophe Echoes*, WASH. TIMES, Sept. 16, 2005.

[49] Mitchell, *supra* note 31.

[50] *Hearing on Hurricane Protection Plan for Lake Pontchartrain and Vicinity Before the Subcomm. on Water Res. of the House Comm. on Pub. Works and Transp.*, 95th Cong., 2d Sess. 20 (1978) (testimony of Colonel early J. Rush III) [hereinafter *House Hearing on Pontchartrain Hurricane Protection Project*].

[51] Save Our Wetlands v. Rush, Civ. No. 75-3710, slip op. at 5 (E.D. La. 1977).

[52] *Id.* at 6.

[53] U.S. GEN. ACCOUNTING OFFICE, IMPROVED PLANNING NEEDED BY THE CORPS OF ENGINEERS TO RESOLVE ENVIRONMENTAL, TECHNICAL AND FINANCIAL ISSUES ON THE LAKE PONTCHARTRAIN HURRICANE PROTECTION PROJECT 2 (GAO/MASAD-82-39, Aug. 17, 1982).

[54] U.S. GEN. ACCOUNTING OFFICE, COST, SCHEDULE, AND PERFORMANCE PROBLEMS OF THE LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA, HURRICANE PROTECTION PROJECT 16 (PSAD-76-161, Aug. 31, 1976) [hereinafter GAO, COST, SCHEDULE, AND PERFORMANCE PROBLEMS].

[55] *See House Hearing on Pontchartrain Hurricane Protection Project*, *supra* note 49.

[56] ORLEANS LEVEE DIST. BD. OF COMM'RS, THE ORLEANS LEVEE DISTRICT: HISTORY, *available at* <http://www.orleanslevee.com/History1.htm>.

[57] Grunwald, *supra* note 30.

[58] U.S. GOV'T ACCOUNTABILITY OFFICE, IMPROVED ANALYSIS OF COSTS AND BENEFITS NEEDED FOR SACRAMENTO FLOOD PROTECTION PROJECT 20 n.13 (GAO-04-3, 2003).

[59] All of the figures in this paragraph were reported in U.S. EPA, *Update: Response to Hurricane Katrina* (Sept. 19, 2005),

available at <http://www.epa.gov/katrina/activities.html#sep13> [hereinafter EPA, RESPONSE KATRINA].

[60] *Id.*

[61] Marla Cone and Ashley Powers, *EPA Warns Muck Left by Floodwaters Is Highly Contaminated*, LA TIMES (September 16, 2005), *available at* <http://www.latimes.com/news/nationworld/nation/la-091605nola_lat,0,5316762.story?coll=la-home-headlines> (last visited Sept. 24, 2005).

[62] *Id.*

[63] Ryan Parry, *Mississippi Burning: Pollution Hells as Fires, Explosions and Oil Spills Follow*, THE DAILY MIRROR (U.K.), Sept. 3, 2005, at 6, 7; *see also* Sewell Chan & Andrew Revkin, *Water Returned to Lake Pontchartrain Contains Toxic Material*, N.Y. TIMES, Sept. 7, 2005, at A1. The two spills occurred at a Bass Enterprise storage depot in Venice and at a Murphy Oil facility in Chalmette. The Bass spill was estimated at about 68,000-78,000 barrels and the Murphy spill at about 10,000 barrels. *See* Jim Loney, *It's Almost Unimaginable, the Things We Are Going to Have to Deal With*, Sept. 6, 2005, *available at* <http://hartmannwatchwatch.blogspot.com/2005/09/its-almost-unimaginable-things-we-are.html> (last visited Sept. 24, 2005); Susanne Pagano, *EPA Finds Louisiana Floodwaters Contaminated with Lead, Coliform*, 36 BNA ENV'T REPORTER 1870 (Sept. 9, 2005).

[64] Associated Press, *Katrina and the Environment*, Sept. 16, 2005, *available at* <http://www.cbsnews.com/stories/2005/09/16/Katrina/main855409.shtml> (last visited Sept. 21, 2005).

[65] The Administrator of EPA has indicated that all tests conducted by the agency of waters in the flooded residential areas of New Orleans exceed by at least ten times the levels determined by EPA to be safe for human exposure for bacteria that include *e. coli* and fecal coliform. *See* Pagano, *supra* note 63 (indicating that EPA stopped measuring the amount of bacteria in the water when the levels reached the ten-fold point). *See also* EPA, *EPA and LDEQ Report Potential Health Risks from Sediments*, *available at* <http://yosemite.epa.gov/opa/admpress.nsf/d9bf8d9315e942578525701c005e573c/387f99c6a7a0b7808525707e0062479d!OpenDocument>. By some accounts, fecal coliform has been found in some of the floodwaters at levels thousands of times higher than the levels designated by EPA as safe. Dina Cappiello, *Tainted Water*, HOUSTON CHRONICLE, Sept. 13, 2005, *available at* <http://www.chron.com/cs/CDA/ssistory.mpl/special/05/katrina/3351081> (last visited Sept. 24, 2005). Several people have already died from exposure to bacteria closely linked to cholera and some people have fallen ill with *Vibrio vulnificus*, a common marine bacteria. Genevieve Roberts, *Bacteria in Floodwater Blamed for Three Deaths*, THE INDEPENDENT, Sept. 8, 2005, *available at* <http://news.independent.co.uk/world/americas/article311127.ece> (last visited Sept. 24, 2005); CNN, *At Least Thirty Found Dead in Nursing Home*, Sept. 8, 2005, *available at* <http://www.cnn.com/2005/US/09/07/katrina.impact/index.html> (last visited Sept. 24, 2005); Pagano, *supra* note 63.

[66] Cappiello, *supra*, note 65.

[67] Marla Cone, *Floodwaters a Soup of Pathogens, EPA Finds*, L.A. TIMES, Sept. 8, 2005, at A18.

[68] Pagano, *supra*, note 63.

[69] Cone, *supra*, note 67.

[70] *See, e.g.*, Andrew Gumbel & Rupert Cornwell, *After Katrina: The Toxic Timebomb*, THE INDEPENDENT, Sept. 7, 2005, *available at* <http://news.independent.co.uk/world/americas/article310814.ece> (last visited Sept. 24, 2005).

[71] Cappiello, *supra*, note 65.

[72] CNN, *EPA: Bacteria, Lead in New Orleans Floodwaters*, Sept. 15, 2005, *available at* <http://www.cnn.com/2005/TECH/science/09/14/katrina.environment.ap/index.html> (last visited Sept. 24, 2005).

[73] Juliet Eilperin, *Flooded Toxic Waste Sites Are Potential Health Threat*, WASH. POST, Sept. 10, 2005, at A15.

[74] Cone, *supra* note 67. Some of these chemicals are known to cause or are suspected of causing adverse health effects such as cancer, birth defects, and neurological problems. Rebecca Claren, *"The Entire Community Is Now a Toxic Waste Dump,"* SALON, Sept. 9, 2005, *available at* <http://www.salon.com/news/feature/2005/09/09/wasteland/index.html> (last visited Sept. 24, 2005).

[75] Sewell Chan & Andrew Revkin, *Water Returned to Lake Pontchartrain Contains Toxic Material*, N.Y. TIMES, Sept. 7, 2005, at A1.

[76] EPA, RESPONSE KATRINA, *supra* note 59.

[77] A few days after the hurricane hit New Orleans, an explosion occurred at a chemical factory located 15 blocks from the French Quarter and two miles from the Louisiana Superdome and the New Orleans Convention Center, which housed the bulk of the city's refugees. Parry, *supra* note 63.

[78] *See* Reuters, Jim Loney, *Few Choices to Rid New Orleans of Poisoned Water*, Sept. 6, 2005.

[79] Gumbel & Cornwell, *supra* note 70.

[80] Amy Althans, *Presentation to Focus on Revival of Lake Basin Foundation Chief Talks to AAUW*, TIMES PICAYUNE (New Orleans), January 13, 2005; Leslie Williams, *Beach Group Has Game Plan: Natural Feel Desired for Area Along Lake*, TIMES PICAYUNE (New Orleans), Sept. 6, 2004.

[81] *See* Eilperin, *supra* note 73.

[82] Ms. Subra is a nationally recognized expert who testified before the U.S. Senate Environment & Public Works Committee on Superfund Reauthorization in 1997. The testimony is available at <http://epw.senate.gov/105th/sub_9-04.htm>. She can be reached at either (337) 367-2216 or (337) 578-3994.

[83] The Agriculture Street site operated from 1912 until 1959, but was reopened in 1965 to receive debris created by Hurricane Betsy. The combination of garbage and service station oil waste often caused fires at the site, and during that period, local residents called it "Dante's Inferno." A complete, 12-page site description explaining the contamination and remediation of this site was available on the EPA web site as of September 10,2005. As of September 23, 2005, this document was replaced by a three-page version that is far less informative. A paper copy of the original site description, entitled *Agriculture Street Landfill* with an EPA Publication date of April 6, 2005 is on file with the authors [hereinafter referred to as "Original Agriculture Street Landfill Description"]. The revised version is available at <http://www.epa.gov/earth1r6/6sf/pdffiles/0600646.pdf>.

[84] Among the issues surrounding the site, in addition to the inadequacy of the remedy, explains Darryl Malek-Wiley, an environmental justice organizer with the Sierra Club, is the government's role in the 1970s in "encouraging first-time black homebuyers" to settle in a development that residents later learned to be on top of the former landfill. Eilperin, *supra* note 73.

[85] AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, PUBLIC HEALTH ASSESSMENT: AGRICULTURE STREET LANDFILL, *available at* <http://www.atsdr.cdc.gov/HAC/PHA/agriculturestreet/asl_p1.html>.

[86] EPA picked up 52,615 tons of soil, or an average of 86 tons per acre, and put down 177,293 cubic yards of clean fill in its place. *See* Original Agriculture Street Landfill Description, *supra* note 83.

[87] For an account of the trip, *see* <http://www.ejrc.cau.edu/unchr_ej.htm>. For further information about environmental justice issues at Superfund sites, *see infra* notes 220-60 and accompanying text (*The Two Americas: Race, Class and Injustice*), and Alicia Lyttle, Agriculture Street Landfill: Environmental Justice Case Study (U. Mich., Jan. 2003), *available at* <http://www.umich.edu/~snre492/Jones/agstreet.htm>; <http://www.ejrc.cau.edu/POCEG-02.PDF>; and Robert D. Bullard, *Environmental Justice in the 21st Century* (Envtl. Justice Res. Ctr.), *available at* <http://assets.cambridge.org/052166/0629/sample/0521660629ws.pdf>.

[88] *See* EPA Site Description, *Bayou Bonfouca, Slidell, Louisiana*, *available at* <http://www.epa.gov/earth1r6/6sf/pdffiles/0600574.pdf>.

[89] Louisiana Dep't of Envtl. Quality, *Fish Consumption and Swimming Advisories* (Jan. 11, 2005), *available at* <http://www.deq.state.la.us/surveillance/mercury/fishadvi.htm#table>.

[90] AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, PUBLIC HEALTH ASSESSMENT: BAYOU BONFOUCA, *available at* <http://www.atsdr.cdc.gov/HAC/PHA/bonfouca/bon_p3.html>.

[91] A complete, 8-page site description explaining the contamination and remediation of this site was available on the EPA web site as of September 10,2005. As of September 23, 2005, this document was replaced by a three-page version that is far less informative. A paper copy of the original site description, entitled *Madisonville Creosote Works* with an EPA Publication date of September 6, 2005 is on file with the authors. The revised is available at <http://www.epa.gov/earth1r6/6sf/pdffiles/0600653.pdf>.

[92] Unfortunately, there are no "deep pocket" corporations in evidence around the three sites described above, and the only alternative is for the Superfund to pick up the tab.

[93] Meredith Preston & Susan Bruninga, *Amendment to Reinstate Industry Tax to Support Trust Fund Defeated in Senate*, 35 BNA ENV'T REPORTER 536 (March 12, 2004). For more information on the battle to reinstate the tax, *see* Dean Scott, *Senators Criticize Cut in EPA Water Fund, Challenge Pace for Superfund Cleanups*, 46 BNA ENV'T REPORTER, 263 (Feb. 11, 2005).

[94] President Bush has recommended holding Superfund spending level, adding only $32 million to the program in his most recent budget. Because of the missing money, EPA will only be able to address 40 sites in the upcoming year, down from an average of 80 during the Clinton Administration. *Id.*

[95] *See* CLIMATE CHANGE 2001: IMPACTS, ADAPTATION, AND VULNERABILITY CONTRIBUTION OF WORKING GROUP II TO THE THIRD ASSESSMENT OF GLOBAL CLIMATE CHANGE 766 (McCarthy et al. eds., 2001).

[96] Kevin Trenberth, *Climate: Uncertainty in Hurricanes and Global Warming*, 308 SCIENCE 1753, 1754 (June 17, 2005). *See also* Kerry Emanuel, *Increasing Destruction of Tropical Cyclones Over the Past Thirty Years*, 436 NATURE 686 (Aug. 4, 2005); Thomas R. Knutson, Robert E. Tuleya, *Impact of CO_2–Induced Warming on Simulated Hurricane Intensity and Precipitation: Sensitivity to the Choice of Climate Change Model and Convective Parameterization*, 17 J. CLIMATE 3477 (2004).

[97] Nearly 90% of U.S. energy economy is based on fossil fuels and the United States consumes about 25% of the world's oil production. DOE ENERGY INFO. AGENCY, ANNUAL ENERGY REVIEW 2004, at 8-9 (Aug. 2005) *available at* <http://www.eia.doe.gov/emeu/aer/contents.html>.

[98] DANIEL L. ALBRITTON, ET AL., INTERGOV'TL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2001: SYNTHESIS REPORT (Robert T. Watson et al. eds., 2001), *available at* <http://www.grida.no/climate/ipcc_tar/vol4/english/>.

[99] *See, e.g.*, NAT'L COMM'N ON ENERGY POL'Y, ENDING THE ENERGY STALEMATE: A BIPARTISAN STRATEGY TO MEET AMERICA'S ENERGY CHALLENGES (Dec. 2004); ENERGY FUTURE COALITION, CHALLENGE AND OPPORTUNITY: CHARTING A NEW ENERGY FUTURE 27-29, 86-100 (2003); WILLIAM J. CLINTON PRESIDENTIAL FOUND., CONFERENCE PROCEEDINGS OF NEW THINKING ON ENERGY POLICY: MEETING THE CHALLENGES OF SECURITY, DEVELOPMENT, AND CLIMATE CHANGE (Dec. 6, 2004) (video of the forum available at <http://www.clintonpresidentialcenter.org/index.htm>).

[100] Private international energy firms such as British Petroleum and the Shell Group and domestic firms such as Cinergy have adopted the concept of sustainable development in their overall energy planning, making sustainability a public-private partnership. *See, e.g.*, Brit. Petroleum, *Environment and Society: Climate Change*, *at* <http://www.bp.com/subsection.do?categoryId=4451&contentId=3072030> (British Petroleum's webpage on climate change); Shell Group, *Environment and Society*, *at* <http://www.shell.com/home/Framework?siteId=royal-en&FC3=/royal-en/html/iwgen/environment_and_society/dir_environment_and_society.html&FC2=/royal-en/html/iwgen/leftnavs/zzz_lhn7_0_0.html> (Shell Group's webpage on environmental issues, including climate change and renewable resources); Cinergy, Sustainability, *at* <http://www.cinergy.com/sustain/default.asp> (Cinergy's webpage on sustainable development).

[101] *See* LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT (Adrian J. Bradbrook et al. eds., 2005); RICHARD L. OTTINGER ET AL., COMPENDIUM OF SUSTAINABLE ENERGY LAWS (2005); U.N. DEV. PROGRAMME, ENERGY FOR SUSTAINABLE DEVELOPMENT: A POLICY AGENDA (Thomas B. Johnasson & José Goldemberg eds., 2002); IUCN ENVTL. LAW PROGRAMME, ENERGY LAW AND SUSTAINABLE DEVELOPMENT (Adrian J. Bradbrook & Richard L. Ottinger eds., 2003).

[102] Despite the recently enacted Energy Policy Act of 2005 (EP Act of 2005), as reported in H. R. REP. NO. 109-190 (2005), we continue to favor large-scale, capital-intensive, national fossil fuel firms and industries. The recently enacted EP Act of 2005 does provide some funding for renewable resources and for research and development in new energy technologies and higher energy efficiencies. Nevertheless, the bulk of the Act favors traditional energy industries and provides, according to a Congressional Research Service report, over $4 billion to the oil industry, $3 billion to the coal industry, and over $5 billion to the nuclear power industry. *See* ROBERT L. BAMBERGER & CARL E. BEHRENS, CONG. RESEARCH SERV., ENERGY POLICY: COMPREHENSIVE ENERGY LEGISLATION (H.R. 6) IN THE 109TH CONGRESS (July 29, 2005), *available at* <http://www.usembassy.it/pdf/other/IB10143.pdf>. The Act favors traditional energy industries while loosening environmental restrictions, loosening restrictions on oil and gas drilling on our nation's coasts, failing to reduce dependence on foreign oil, and failing to reduce oil consumption even with the simple expedients of improved vehicle fuel standards and requirements for greater use of renewable energy resources. *See* MINORITY STAFF OF HOUSE COMM. ON GOV'T REFORM, FLASH REPORT: KEY IMPACTS OF THE ENERGY BILL — H.R. 6 (July 2005); Bamberger & Behrens, *supra*.

[103] DOE ENERGY INFO. AGENCY, *supra* note 97.

[104] Peter Maas, *The Braking Point*, N.Y. TIMES MAG. 30 (Aug. 21, 2005); PAUL ROBERTS, THE END OF OIL (2004).

[105] Links to sources for this timeline and a more complete timeline can be found at <http://www.thinkprogress.org/katrina-timeline>.

[106] Press Release, U.S. Dept. of Comm., After 10 Years, Hurricane Andrew Gains Strength (Aug. 21, 2002), *at* <http://www.nhc.noaa.gov/NOAA_pr_8-21-02.html>.

[107] *See* Daniel Zwerdling, *Hurricane Risk to New Orleans*, AM. RADIOWORKS (Sept. 2002, Minn. Public Radio & NPR News), *at* <http://americanradioworks.publicradio.org/features/wetlands/hurricane1.html>.

[108] *See, e.g.*, David R. Baker, *Thousands Dead, 1 Million Evacuated. Katrina? No, Simulation Run Last Year*, S.F.

CHRON., Sept. 9, 2005; Joel K. Bourne, *Gone with the Water*, NAT'L GEOG., Oct. 2004, *available at* <http://www3.nationalgeographic.com/ngm/0410/feature5/>; Zwerdling, *supra* note 107.

[109] Eric Berger, *Keeping Its Head Above Water*, HOUS. CHRON., Dec. 1, 2001.

[110] *See, e.g.*, Leonard Witt, *No Plan Ever Made to Help New Orleans' Most Vulnerable*, ATLANTA J-CONST., Sept. 1, 2005 (25,000 to 100,000); Shirley Laska, *What If Hurricane Ivan Had Not Missed New Orleans?*, 29 NAT. HAZARDS OBSERVER (2004) (40,000 to 60,000); Bourne, *supra* note 108 (50,000); Zwerdling, *supra* note 107 (20,000 to 100,000).

[111] City of New Orleans Comprehensive Emergency Management Plan, Annex I: Hurricanes, *available at* <http://www.cityofno.com/portal.aspx?portal=46&tabid=26>, pt. 3.

[112] *See* City of New Orleans Comprehensive Emergency Management Plan, Special Needs Shelter Plan, *available at* <http://www.cityofno.com/portal.aspx?portal=46&tabid=28>, pt. I.

[113] State of Louisiana, Emergency Operations Plan, Supplement 1A: Southeast Louisiana Hurricane Evacuation and Sheltering Plan (Jan. 2000), at annex C, pp. C-2 to C-5, *available at* <http://www.ohsep.louisiana.gov/plans/EOPSheltersupplement.pdf> [hereinafter Southeast Louisiana Hurricane Evacuation and Sheltering Plan]; City of New Orleans Comprehensive Emergency Management Plan, Annex I: Hurricanes, *supra* note 111.

[114] *New 'Times-Picayune' Editorial Hits Feds for Blaming Others*, EDITOR & PUBLISHER, Sept. 7, 2005, *available at* <http://www.editorandpublisher.com/eandp/news/article_display.jsp?vnu_content_id=1001055628> (last visited Sept. 11, 2005).

[115] *Id.*

[116] Bruce Nolan, *In Storm, N.O. Wants No One Left Behind*, TIMES-PICAYUNE (New Orleans), July 2, 2005, *available at* <http://www.nola.com/search/index.ssf?/base/news-10/1122184560198030.xml?nola> (last visited Sept. 9, 2005).

[117] Laska, *supra* note 110.

[118] John McQuaid & Mark Schleifstein, *Left Behind*, TIMES-PICAYUNE (New Orleans), June 24, 2002, *available at* <http://www.nola.com/hurricane/index.ssf?/washingaway/leftbehind_1.html> (last visited Sept. 19, 2005) (alterations in original). Louisiana's Emergency Operations Plan also recognizes that "[s]heltering of evacuees outside of the [Greater New Orleans Metropolitan Area] becomes necessary in a Category 3 or higher hurricane." Southeast Louisiana Hurricane Evacuation and Sheltering Plan, *supra* note 114, at II-1.

[119] Southeast Louisiana Hurricane Evacuation and Sheltering Plan, *supra* note 113, at III-5.

[120] State of Louisiana Emergency Operations Plan, Supplement IC: Shelter Operations Plan (Jan. 2000), at 11, Part Three, sec. III.A.1, *available at* <http://www.ohsep.louisiana.gov/plans/EOPShelter supplement.pdf>.

[121] Southeast Louisiana Hurricane Evacuation and Sheltering Plan, *supra* note 113, at IV-2; *see also id.* at III-4. Obviously, this instruction was never implemented in preparation for Katrina.

[122] *See id.* at III-5 (instructing parish officials to "[a]ssist person with mobility limitations to find last resort refuge," and providing that persons at "last resort" refuges "who cannot be evacuated in time to avoid the storm will remain" in these refuges).

[123] *See* Michael Perlstein & Brian Thevenot, *Evacuation Isn't an Option for Many N.O. Area Residents*, TIMES PICAYUNE, Sept. 15, 2004, at Metro, p. 1.

[124] Laska, *supra* note 110.

[125] *Id.*

[126] Nolan, *supra* note 116.

[127] *Id.*

[128] *See* Lise Olsen, *City Had Evacuation Plan But Strayed from Strategy*, HOUS. CHRON., Sept. 8, 2005.

[129] The 64 larger buses accommodate only around 60 people each, and the current estimate of the number of people without the resources to evacuate is 134,000. *See* Nolan, *supra* note 116. FEMA provided 500 buses to evacuate approximately 25,000 people from the Superdome alone. Associated Press, *Refugees Heading to Texas*, Sept. 1, 2005, *available at* <http://www.foxnews.com/story/0,2933,167926,00.html> (last visited Sept. 11, 2005).

[130] Mark Schleifstein, Preparing for the Worst, TIMES PICAYUNE, May 31, 2005, *available at* <www.nola.com.news/t-p/frontpage/indexssf2/base/news-3111751902915010O.xml.> Matthews further noted that the viability of whatever plan the city could implement would depend on whether RTA and New Orleans public school officials could find volunteer bus drivers. *Id.*

[131] Nolan, *supra* note 116.

[132] *Id.*

[133] *See supra* notes 107-10 and accompanying text.

[134] *See* Letter from Rep. Tom Davis, Chairman & Rep. Henry Waxman, Ranking Minority Member, House Comm. on Gov't Reform, to Michael Chertoff, Secretary of DHS (Sept. 9, 2005), *available at* <http://democrats.reform.house.gov/Documents/20050909123505-34183.doc> (describing the IEM contract and the hurricane simulation exercise and requesting further documentation of activities undertaken pursuant to the contract); Press Release, IEM, IEM Team to Develop Catastrophic Hurricane Disaster Plan for New Orleans & Southeast Louisiana (June 3, 2004), *available at* <www.ieminc.com/Whats_New/Press_Releases/pressrelease060304_Catastrophic.htm>.

[135] Press Release, FEMA, Hurricane Pam Exercise Concludes (July 23, 2004), *available at* <http://www.fema.gov/news/newsrelease.fema?id=13051>. Michael L. Brown, Louisiana's Deputy Director for Emergency Preparedness, bears no relation to Michael D. Brown, the former Director of FEMA who resigned shortly after Katrina hit the Gulf Coast. Ken Silverstein & Josh Meyer, *Louisiana Officials Indicted Before Katrina Hit*, L.A. TIMES, Sept. 17, 2005, *available at* <http://www.calendarlive.com/printedition/calendar/qtakes/la-na-money17sep17,0,7229986.story> (last visited Sept. 19, 2005).

[136] Richard A. Webster, *Terrible Traces: N.O. Evacuation Fails to Account for Thousands*, NEW ORLEANS CITY BUS., Sept. 27, 2004.

[137] Associated Press, Ron Fournier & Ted Bidris, *Hurricane Simulation Predicted 61,290 Dead*, Sept. 9, 2005, *available at* <http://news.yahoo.com/s/ap/20050909/ap_on_re_us/katrina_what_planners_feared>; *see also* Knight Ridder, Seth Borenstein, *Federal Government Wasn't Ready for Katrina, Disaster Experts Say*, Sept. 1, 2005, *available at* <http://www.commondreams.org/headlines05/0901-01.htm>.

[138] Eric Lipton, et al., *Disarray Marked Path from Hurricane to Anarchy*, N.Y. TIMES, Sept. 11, 2005, at 1.

[139] NOAA, Nat'l Weather Serv., Urgent Weather Message, Aug. 28, 2005, *available at* <http://wikisource.org/wiki/August_28_2005_10:11_AM_CDT_NOAA_Bulletin> (last visited Sept. 9, 2005) (emphasis added).

[140] Associated Press, *Mandatory Evacuation Ordered for New Orleans*, Aug. 28, 2005.

[141] Other factors constraining the ability of the poorest residents to evacuate are discussed infra note 247 and accompanying text.

[142] *Compare* U.S. CENSUS BUREAU, LOUISIANA QUICKFACTS (2000), *at* <http://quickfacts.census.gov/qfd/states/22/2255000.html> (stating that 27.9% of New Orleans residents are living in poverty), *with* U.S. CENSUS BUREAU, USA QUICKFACTS (2000), *at* <http://quickfacts.census.gov/qfd/states/00000.html> (stating that 12.4% of U.S. residents are living in poverty).

[143] *See Race in New Orleans: Shaping the Response to Katrina?* (Democracy Now! radio broadcast, Sept. 2, 2005) (transcript available at <http://www.democracynow.org/article.pl?sid=05/09/02/1419218>) (interview with Dr. Beverly Wright, Director of the Deep South Center for Environmental Justice); *infra* text accompanying note 240.

[144] David Gonzalez, *From Margins of Society to Center of Tragedy*, N.Y. TIMES, Sept. 2, 2005.

[145] Associated Press, *Mandatory Evacuation Ordered for New Orleans*, Aug. 28, 2005; Olsen, *supra* note 128.

[146] BBC News, "Looting and lawlessness are widespread in flood-stricken New Orleans as people made homeless by Hurricane Katrina grow increasingly desperate," Sept. 1, 2005, *available at* <http://news.bbc.co.uk/1/hi/world/americas/4205074.stm>

[147] Associated Press, *The Decision Won't Come Soon on the Superdome's Future*, Sept. 8, 2005, *available at* <http://www.philly.com/mld/inquirer/sports/12585714.htm> (last visited Sept. 9, 2005).

[148] Joseph B. Treaster & Deborah Sontag, *Local Officials Criticize Federal Government Over Response,* NY TIMES, Sept. 2, 2005.

[149] Erika Bolstad, *Thousands Finally Leaving, Headed to Uncertain Future*, PHIL. INQUIRER, Sept. 2, 2005.

[150] BBC News, *Refugees Tell Tales of Horror*, Sept. 2, 2005, *available at* <http://news.bbc.co.uk/1/hi/world/americas/4207944.stm> (last visited Sept. 9, 2005).

[151] Wil Haygood & Ann Scott Tyson, *'It Was as If All of Us Were Already Pronounced Dead'*, WASH. POST, Sept. 15, 2005, at A1..

[152] David Rohde et al., *Vulnerable and Doomed in the Storm*, N.Y. TIMES, Sept. 19, 2005, *available at* <www.nytimes.com/2005/09/19/national/nationalspecial/19victims.html> (last visited Sept. 22, 2005).

[153] BBC News, *New Orleans Evacuation Under Way*, Sept. 1, 2005, <http://news.bbc.co.uk/2/hi/americas/4203718.stm#map> (last visited Sept. 22, 2005).

[154] Rohde et al., *supra* note 152.

[155] *Id.*

[156] Stephen J. Hedges, *Navy Ship Nearby Underused*, CHI.TRIB., Sept. 4, 2005, <http://www.chicagotribune.com/news/

nationworld/chi-0509040369sep04,1,4144825.story?page=1> (last visited Sept. 22, 2005).

[157] Eventually, it dispatched a 135-foot landing craft loaded with a crew of 16, including a doctor, as well as food, water and medical supplies, to travel the ninety miles up the Mississippi to New Orleans. Before the landing craft could deliver its cargo, the Bataan was dispatched to stand off Gulfport, Miss., and the landing craft was called back to the ship. *Id.*

[158] Interview by Karen Sokol with Dana Lynn, displaced New Orleans evacuee, Houston, Tx. (Sept. 2, 2005).

[159] *See* Haygood & Tyson, *supra* note 151; *see also* Scott Gold, *Trapped in an Arena of Suffering*, L.A. TIMES, Sept. 1, 2005, *at* <http://www.nola.com/newslogs/breakingtp/index.ssf?/mtlogs/nola_Times-Picayune/archives/2005_08.html#075561> (last visited Sept. 11, 2005) (noting that by Wednesday, August 31, the Superdome "had degenerated into horror," and that officials were "turn[ing] away hundreds"); Keith Spera, *Desperation, Death on Road to Safety*, TIMES-PICAYUNE (New Orleans), Aug. 31, 2005, *at* <http://www.nola.com/newslogs/breakingtp/index.ssf?/mtlogs/nola_Times-Picayune/archives/2005_08.html#075561> (last visited Sept. 11, 2005) (noting that new evacuees from flooded areas were being taken to the Convention Center). When Don Carr went to the French Quarter to get food and water for his family and neighbors staying on the second story of a house in his neighborhood in the 8th Ward, police told him that "six more feet of water was coming and to get to the Superdome." When he and the rest of his group arrived at the Dome, however, the guards would not allow them or hundreds of others to enter. Interview by Karen Sokol with Don Carr, displaced New Orleans evacuee, Houston, Tx. (Sept. 5, 2005).

[160] Interview by Karen Sokol with Kay Brown, displaced New Orleans evacuee, Houston, Tx. (Sept. 5, 2005.

[161] Larry Eichel, *Unlike 9/11: Government Response Blasted*, PHIL. INQUIRER, Sept 4, 2005.

[162] *Id.*

[163] Associated Press, *Administration Feeling Heat for Response to Katrina*, USA TODAY, Sept. 2, 2005; *see also* Peter Whoriskey & Susan Levine, *Guard Troops Descend Upon the Chaos*, WASH. POST, Sept. 4, 2005, at A1 ("The National Guard arrived here in force Friday . . . .").

[164] A Defense Department Briefing by Lt. Gen. H. Steven Blum described the National Guard arrival at the convention center on Friday:

> . . . a potentially very dangerous volatile situation in the convention center where tens of thousands of people literally occupied that on their own. We had people that were evacuated from hotels, and tourists that were lumped together with some street thugs and some gang members that – it was a potentially very dangerous situation.
>
> We waited until we had enough force in place to do an overwhelming force. Went in with police powers, 1,000 National Guard military policemen under the command and control of the adjutant general of the State of Louisiana, Major General Landreneau [at noon Friday] stormed the convention center, for lack of a better term, and there was absolutely no opposition, complete cooperation, and we attribute that to an excellent plan, superbly executed with great military precision. . . .
>
> Had we gone in with less force it may have been challenged, innocents may have been caught in a fight between the Guard military police and those who did not want to be processed or apprehended, and we would put innocents' lives at risk. As soon as we could mass the appropriate force, which we flew in from all over the states at the rate of 1,400 a day, they were immediately . . . moved right to the scene, briefed, rehearsed, and then they went in and took this convention center down.

Dep't of Def., News Briefing, Sept 3, 2005 (presented by Lt. Gen. H. Steven Blum, National Guard Bureau Chief) (transcript available at <http://www.dod.mil/transcripts/2005/tr20050903-3850.html>).

[165] *A Free Fall from Grace*, CONN. POST, Sept. 3, 2005.

[166] *A Ruined City Left for Dead*, CANBERRA TIMES (Australia), Sept. 3, 2005, at 1.

[167] *Frustration Boils*, THE ADVOCATE (Baton Rouge), Sept. 2, 2005, at 1-A ("Gov. Kathleen Blanco warned looters that 300 Arkansas National Guardsmen, "fresh from Iraq," have arrived in the storm-stricken city. And they are "more than willing" to shoot criminals on sight, she said.").

[168] *A Ruined City Left for Dead*, *supra* note 166.

[169] *See, e.g.*, CNN, *Convoys Bring Relief to New Orleans*, Sept. 2, 2005, *available at* <http://www.cnn.com/2005/US/09/02/katrina.impact/index.html> (last visited Sept. 22, 2005) (quoting CNN's Barbara Starr reporting of Lt. Gen. Russel Honore, "A few moments ago, he stopped a truck full of National Guard troops . . . and said, 'Point your weapons down, this is not Iraq'").

[170] Susan B. Glasser & Michael Grunwald, *The Steady Buildup to a City's Chaos*, WASH. POST, Sept. 11, 2005, at A1.

[171] *Id.*

[172] *Id.*

[173] Larry Eichel, *Unlike 9/11: Government Response Blasted*, PHIL. INQUIRER, Sept 4, 2005.

[174] *See* Michelle Millhollon, *Blanco Says Feds Pledged Buses*, THE ADVOCATE (Baton Rouge), Sept. 18, 2005, *available at* <http://www.2theadvocate.com/stories/091805/new_blanco001.shtml> (last visited Sept. 20, 2005); Glasser & Grunwald, *supra* note 170.

[175] Lipton, et al., *supra* note 138.

[176] Millhollon, *supra* note 174.

[177] *Id.*

[178] Secretary Michael Chertoff, U.S. Dep't of Homeland Sec., *CBS News' Face the Nation* (Sept. 4, 2005), *transcript available at*: <http://www.cbsnews.com/htdocs/pdf/face_90405.pdf> (last visited Sept. 22, 2005).

[179] *See supra* notes 134-35 and accompanying text for a discussion of the FEMA-IEM planning exercise.

[180] Rescue planning, for example, had apparently concluded that one line of communication would remain open, but when both cell phone and land lines failed, for days rescuers had only short-range walkie-talkies. Daniel Zwerdling and Laura Sullivan, *Katrina: What Went Wrong* (NPR News, Sept. 9, 2005), *at* <http://www.npr.org/templates/story/story.php?storyId=4839943> (last visited Sept. 22, 2005).

[181] Susan B. Glasser and Josh White, *Storm Exposed Disarray at the Top*, WASH. POST, Sept. 4, 2005, *available at* <http://www.washingtonpost.com/wp-dyn/content/article/2005/09/03/AR2005090301653.html> (last visited Sept. 22, 2002).

[182] Byjon Elliston, *Disaster in the Making*, INDEPENDENT WEEKLY (U.K.), Sept. 22, 2004, *available at* <http://www.indyweek.com/durham/2004-09-22/cover.html> (last visited Sept. 22, 2005).

[183] *Id.*

[184] *Id.*

[185] *Id.*

[186] *Review of the Gen. Accounting Office Report on the Federal Emergency Management Agency's Activities After the Terrorist Attacks on September 11, 2001: Hearing Before the U.S. Senate Comm. on Environment & Public Works*, 108th Cong. (2003) (statement of Dale Shipley, Executive Director, Ohio Emergency Management Agency), *available at* <http://epw.senate.gov/hearing_statements.cfm?id=212197> (last visited 09/22/2005).

[187] Elliston, *supra*, note 182.

[188] *Hearing Before the Subcomm. on Veterans Affairs, Housing and Urban Development and Independent Agencies of the Senate Appropriations Comm.* (Statement of Joe Allbaugh, Director, Federal Emergency Management Agency) 107th Cong. (2001), *available at* <http://www.fema.gov/library/jma051601.shtm>.

[189] *Id.*

[190] Elliston, *supra*, note 182.

[191] *Id.*

[192] Charlie Savage, *Slow Response Exposes Holes in Planning*, BOSTON GLOBE, Sept. 4, 2005.

[193] Glasser and White, *supra* note 181.

[194] On August 12, 2005 Brown resigned and President Bush appointed R. David Paulison as Acting Under Secretary and head of FEMA. U.S. Federal Emergency Management Agency, *R. David Paulison Named Acting Homeland Security Under Secretary/FEMA Head*, September 13, 2005, Press Release No. HQ-05-249, *available at* <http://www.fema.gov/news/newsrelease.fema?id=18835>.

[195] *See* Brett Arends, *Brown Pushed from Last Job: Horse Group: FEMA Chief Had To Be 'Asked to Resign'*, BOSTON HERALD, Sept. 3, 2005, at 5 ("[Brown] got the job through an old college friend who at the time was heading up FEMA.").

[196] *Id.*

[197] *Id.*

[198] According to their online bios on the FEMA website, Chief of Staff Patrick Rhode came to FEMA after a stint as "deputy director of National Advance Operations for the George W. Bush Presidential Campaign," *see* <http://www.fema.gov/about/bios/rhode.shtm>, Deputy Chief of Staff Scott Morris was a media strategist for the 2000 campaign, *see* <http://www.fema.gov/about/bios/smorris.shtm>.

[199] Ron Harris, *Changing Role of National Guard Takes Toll on Its Citizen Soldiers*, ST. LOUIS POST-DISPATCH, Aug. 1, 2005.

[200] *Id.*

[201] Harris, *supra* note 200. *See also* Mark Sappenfield, *Katrina Poses Key Test for Stretched National Guard*, CHRISTIAN SCIENCE MONITOR, Sept. 2, 2005, *available at* <http://www.csmonitor.com/2005/0902/p02s01-usmi.htm> (last visited Sept. 22, 2005); William S. Lind, *Destroying the*

National Guard, LewRockwell.com, Sept. 25, 2004, <http://www.lewrockwell.com/lind/lind40.html> (last visited Sept. 25, 2005).

[202] Bryan Bender, *Demands of Wars Since 9/11 Strain National Guard's Efforts*, BOSTON GLOBE, Sept. 2, 2005. In part because the gear used in combat zones is often battle-damaged, "[t]he National Guard Bureau estimates that its nationwide equipment availability rate is 35 percent, about half the normal level, according to Pentagon statistics." *Id.*

[203] Philip Dine, *National Guard Insists Iraq War Not Hampering Hurricane Response*, THE TRIBUNE (Port St. Lucie/Fort Pierce, FL), Sept. 4, 2005.

[204] Yunji de Nies, *LA National Guard Wants Equipment to Come Back From Iraq*, ABC26 WGNO NEWS, August 1, 2005.

[205] *Id.*

[206] *Id.*

[207] Tom Bowman, *National Guard to Double Relief Forces*, BALTIMORE SUN, Sept. 1, 2005, 5A.

[208] Dave Moniz, *Guard Relief Hurt by Obsolete Equipment*, USA TODAY, Sept. 20, 2005, *available at* <http://www.usatoday.com/news/washington/2005-09-19-guards-equiptment_x.htm> (last visited Sept. 22, 2005).

[209] Bender, *supra* note 202. Another estimate of Guard availability: "[W]hen Hurricane Katrina hit, Louisiana had "65 percent of its troops available for state missions; Mississippi, 60 percent; Alabama, 77 percent; and Florida, 74 percent," according to the Department of Defense. *Hurricane Response Demonstrates Guard's State, Federal Capabilities*, REGULATORY INTELLIGENCE DATA, Aug. 29, 2005. About 3,000 Guard troops had been deployed overseas to Iraq and Afghanistan from each of Louisiana and Mississippi. Donna Miles, *Guard Bureau Hotline Links Deployed Troops, Hurricane-Struck Families*, AMERICAN FORCES PRESS SERVICE, THE NATIONAL GUARD, *available at* <http://www.ngb.army.mil/news/story.asp?id=1756> (last visited Sept. 25, 2005).

[210] CNN Breaking News, *Hurricane Katrina Upgraded to Category 5*, Aug. 28, 2005, *transcript available at* <http://transcripts.cnn.com/TRANSCRIPTS/0508/28/bn.01.html> (last visited Sept. 22, 2005).

[211] By 7 a.m. August 29, at least 3500 Louisiana National Guard troops were on duty throughout the state. *National Guard Responds to Hurricane Katrina*, REGULATORY INTELLIGENCE DATA, Aug. 29, 2005. Lt. Col. Schneider reportedly told Fox News that the Guard was prepared to operate the Superdome shelter "for as long as it takes." *Id.* Schneider also predicted adequate food, water, and cots at the shelters, and said that the Guard had helicopters available to help if needed. *Troops Ready to Assist with Hurricane Katrina*, ARMY NEWS SERVICE, Aug. 29, 2005. When looting began, Lieutenant General H. Steven Blum of the Army National Guard Bureau assured the public that the National Guard would help police bring the looting under control: "We have the National Guard called out in significant numbers, with more on the way to augment, not displace, the local civilian law enforcement. They will have law enforcement powers. They will work to augment the local police departments and the state police departments to ensure that this looting gets under control as quickly as possible." *Rita Cosby Live & Direct* (MSNBC television broadcast, Aug. 29, 2005).

[212] For example, Michael Brown's predecessor at FEMA, Joe Allbaugh, stated that "If anyone is telling you that Iraq is getting in the way, well that's hogwash." Or, "There are plenty," said Lt. Col. Mike Milord of the National Guard Bureau. "There are about 331,000 Army National Guard and 106,000 in the Air Guard, so nationwide about 437,000. Subtract 100,000 for all deployment operations, and you still have 337,000 National Guard available." David A. Sanger, *After Storm, a Tough New Test for Bush*, INTERNATIONAL HERALD TRIBUNE, Sept. 2, 2005, at 1.

[213] When questioned on this issue, Major General Harold Cross of the Mississippi National Guard briefly admitted that he could use more resources:

> If I had all of my Guard forces here, obviously I would have been able to respond more quicker, without question. But, you know, we're also fighting an enemy forward, too, and that's the global war on terrorism. And sure, I would like to have three times as many forces always in the state that I've got, always in a state in their readiness centers, ready to respond to individual communities immediately. But we don't have those resources.

All Things Considered: Mississippi Guard Focusing on Food, Water (NPR News, Sept. 3, 2005), *transcript available in* LEXIS, Nexis Library, NPR File (statement of Major General Harold Cross).

[214] *Id.*

[215] *Defense Department Briefing on Ongoing National Guard Response to Hurricane Katrina*, Sept. 3, 2005, *transcript available at* <http://www.dod.mil/transcripts/2005/tr20050903-3850.html> (last visited Sept. 22, 2005) ("The real issue . . . is that no one anticipated the disintegration or the erosion of the civilian police force in New Orleans.").

[216] *Id.* ("As long as there's one uniformed police officer in the city of New Orleans, we will send as many National Guard soldiers to augment, support, and work in support of that lone law enforcement officer as necessary.").

[217] *Id.* ("When they put the original EMAC together it was really for disaster response. Law enforcement was not envisioned. So it has to be handled as a separate process.").

[218] *Id.*

[219] There are numerous reports of services being offered and turned down. Mayor Daley of Chicago offered emergency, medical and technical help prior to the hurricane's landfall, but was turned down. The American Ambulance Association tried to send 300 emergency vehicles to the flood zone, but was turned down. Col. Tim Tarchick of the Air Force Reserve said his helicopters could have been airborne and recovering survivors in six hours. It took 34 hours to get authorization for them to go. Director Brown urged fire and rescue departments outside of the Gulf Coast States not to send skilled personnel. Glasser and White, *supra* note 181 (Daley and AAA); CBS News, *Memo Tells Story of FEMA Delays*, Sept. 7, 2005, *available at* <http://www.cbsnews.com/stories/2005/09/07/katrina/printable821650.shtml> (last visited Sept. 22, 2005) (Tarchick and fire and rescue departments).

[220]Jason DeParle, *Broken Levees, Unbroken Barriers: What Happens to a Race Deferred*, N.Y. TIMES, Sept. 4, 2005, § 4, at 1.

[221] U.S. Census, *Census 2000 Demographic Profile Highlights, New Orleans, Louisiana, available through* <http://factfinder.census.gov> (hard copy on file with authors).

[222] U.S. Census, *Poverty Status in 1999 by Sex by Age* (2000), *Racial or Ethnic Grouping: Black or African American Alone, New Orleans, Louisiana*, PCT 142, Census 2000 Summary File 4 (SF 4), *available through* <http://factfinder.census.gov> (hard copy on file with authors).

[223] U.S. Census, *Census 2000 Demographic Profile Highlights, New Orleans, Louisiana, available through* <http://factfinder.census.gov> (hard copy on file with authors).

[224] City of New Orleans Health Department, *Homeless Healthcare, available at* <http://www.cityofno.com/portal.aspx?portal=48&tabid=6>.

[225] DeParle, *supra* note 220 (quoting Craig E. Colten, Louisiana State University).

[226] *Id.*; Greater New Orleans Community Data Center, *Lower Ninth Ward Neighborhood: Income & Poverty, available at* <http://gnocdc.org/orleans/8/22/income.html> (poverty rates in the Lower Ninth Ward ten percent higher than in Orleans Parish generally).

[227] Greater New Orleans Community Data Center, *Lower Ninth Ward Neighborhood: People and Household Characteristics, available at* <http://gnocdc.org/orleans/8/22/people.html>.

[228] DeParle, *supra* note 220.

[229] *Id.*

[230] *Id. See also supra* notes 106-77 and accompanying text (*The Failures of All Levels of Government to Plan for Emergency Evacuation of All New Orleans Residents*).

[231] Researchers from a variety of relevant disciplines made explicit the identities of the likely victims. For example, an article by Shirley Laska of the Center for Hazards Assessment, Response and Technology at the University of New Orleans faulted a hurricane evacuation plan that depended almost entirely on individuals' ability to drive their cars to safety. "For those without means, the medically challenged, residents without personal transportation, and the homeless, evacuation requires significant assistance." Laska, *supra*, note 111. Laska estimated that some 120,000 people in New Orleans do not have cars and cited the implications, born of experience during Hurricane Ivan in 2004:

> Residents who did not have personal transportation were unable to evacuate even if they wanted to. A proposal made after the evacuation from Hurricane Georges to use public transit buses to assist in their evacuation out of the city was not implemented for Ivan. If Ivan had struck New Orleans directly it is estimated that 40-60,000 residents of the area would have perished.

Id. In a five-part series published from June 23-27, 2002, *The New Orleans Times-Picayune* similarly highlighted the fact that "a large population of low-income residents do not own cars and would have to depend on an untested emergency public transportation system to evacuate them." McQuaid & Schleifstein, *supra* note 118. A significant portion of those left behind, it observed, "are going to lose their lives." *Id.*

[232] "For years, these advocates have been telling anyone who'd listen that blacks in New Orleans were far more affected by environmental problems than the white folks in, say, the Garden District – and would be far more vulnerable to a disaster. They've long realized a truth that the response to Hurricane Katrina seems to be proving: people in power viewed the city's poorest residents as, says Robert Bullard, expendable in some sense." .Liza

Featherstone, *Race to the Bottom: Slow Katrina Evacuation Fits Pattern of Injustice During Crises*, GRIST MAGAZINE, Sept. 8, 2005, *available at* <http://www.grist.org/news/maindish/2005/09/08/featherstone-katrina/index.html?source=daily> (last visited Sept. 22, 2005).

[233] *Id.*

[234] *Id.*

[235] *See* Makani Themba-Nixon, *Another Case of Government for Some*, Sept. 6, 2005, *available at* <www.alternet.org/story/25058/ >(last visited Sept. 22, 2005).

[236] *See, e.g.*, CONFRONTING ENVIRONMENTAL RACISM: VOICES FROM THE GRASSROOTS (Robert D. Bullard, ed. 1993); LUKE W. COLE AND SHEILA FOSTER, FROM THE GROUND UP: ENVIRONMENTAL RACISM AND THE RISE OF THE ENVIRONMENTAL JUSTICE MOVEMENT (2000); CLIFF RECHTSCHAFFEN AND EILEEN GAUNA , ENVIRONMENTAL JUSTICE: LAW, POLICY AND ENVIRONMENTAL REGULATION (2002).

[237] ROBERT D. BULLARD, DUMPING IN DIXIE: RACE, CLASS AND ENVIRONMENTAL QUALITY 97, 105 (3d ed. 2000).

[238] *Id.* at 26.

[239] Along the Lower Mississippi Industrial Corridor – more infamously known as "Cancer Alley" – between Baton Rouge and New Orleans, "there are scores of polluting facilities lining the Mississippi River on both sides of the river. You're talking about numerous petrochemical plants, plastic production facilities and other heavy industries that are contributing to the pollution flowing into the Mississippi River. Now, near these facilities, in the shadow of these plants, are scores of African-American communities, mostly African-American impoverished communities. People, black and white and Latino, who live in these areas, are exposed to a toxic soup of chemicals regularly released into the air, into the soil, into the water." *Dozens Dead as Hurricane Katrina Slams into Gulf Coast: A Look at Extreme Weather, Oil Development and Who Gets Hit the Hardest*, Interview by Amy Goodman with Damu Smith (Aug. 30, 2005), *available at* <http://www.democracynow.org/article.pl?sid=05/08/30/1354242#transcript> (last visited Sept. 22, 2005).

[240] *Race in New Orleans: Shaping the Response to Katrina?*, Interview by Amy Goodman with Beverly Wright (Sept. 2, 2005), available at <http://www.democracynow.org/article.pl?sid=05/09/02/1419218>.

[241] BULLARD, *supra* note 237, at 5-6.

[242] *See supra* notes 83-87 and accompanying text (*Agriculture Street Landfill – The Black Love Canal*).

[243] AGENCY FOR TOXIC SUBSTANCES DISEASE REGISTRY, HEALTH CONSULTATION: AGRICULTURAL STREET LANDFILL, NEW ORLEANS, ORLEANS PARISH, LOUISIANA, 3 (citing 1990 U.S. Census data).

[244] Featherstone, *supra* note 232.

[245] *See, e.g.*, Catherine A. O'Neill, *Risk Avoidance, Cultural Discrimination, and Environmental Justice for Indigenous Peoples*, 30 ECOLOGY L. Q. 1 (2003).

[246] *Id.*

[247] Peter Applebome, *et al.*, *A Delicate Balance is Undone in a Flash, and a Battered City Waits, Special Section: Storm and Crisis*, N.Y. TIMES, Sept. 4, 2005, A22; As Natasha Brown, a New Orleans evacuee, explained while waiting to see a doctor at a shelter in Houston, "most of these people (who were unable to leave) live paycheck to paycheck." Interview by Karen Sokol with Natasha Brown, displaced New Orleans evacuee, Houston, Tx. (Sept. 5, 2005).

[248] Jonathan Tilove, *Katrina Lays Bare Deep U.S. Racial Inequalities*, THE DETROIT NEWS, Nation/World, Sept. 4, 2005, *available at* <http://www.detnews.com/2005/nation/0509/04/A09-303272.htm> (last visited Sept. 22, 2005).

[249] CNN, *FEMA Chief: Victims Bear Some Responsibility* (Sept. 1, 2005) *available at* <http://www.cnn.com/2005/WEATHER/09/01/katrina.fema.brown/index.html> (last visited Sept. 22, 2005) ("Michael Brown also agreed with other public officials that the death toll in the city could reach into the thousands. 'Unfortunately, that's going to be attributable to people who did not heed the advance warnings,' Brown told CNN. 'I don't make judgments about why people chose not to leave but, you know, there was a mandatory evacuation of New Orleans,' he said.").

[250] Featherstone, *supra* note 232.

[251] National Environmental Justice Advisory Committee, *Ensuring Risk Reduction in Communities with Multiple Stressors: Environmental Justice and Cumulative Risks/Impacts: Draft Report (2004).*

[252] *New Orleans Toxic Tide*, Desert Morning News Web Edition, Sept. 8, 2005, *available at* <http://www.deseretnews.com/dn/view/0,1249,605152846,00.html> (last visited Sept. 22, 2005).

[253] *See, e.g.*, Brad Knickerbocker and Patrik Jonsson, *New Orleans' Toxic Tide*, CHRISTIAN SCIENCE MONITOR (Sept. 8, 2005).

[254] *See, e.g.*, Michael Janofksy, *Bill Would Let E.P.A. Relax Rules for Cleanup*, N.Y. TIMES, Sept. 16, 2005, at A18.

[255] U.S. Census, *Louisiana Quick Facts*, (2000), available at <http://quickfacts.census.gov/qfd/states/22/2255000.html.>

[256] Featherstone, *supra* note 232.

[257] Interview with Beverly Wright, *supra* note 240.

[258] Christopher Cooper, *Old-Line Families Escape Worst of Flood and Plot the Future*, THE WALL STREET JOURNAL, Sept. 8, 2005, at A1.

[259] *Id.*

[260] Peter H. King, *Above the Water, Plans Float for Rebuilding City*, THE SEATTLE TIMES, Sept. 12, 2005, at A1.

[261] John R. Wilke & Brody Mullins, *After Katrina Republicans Back A Sea of Conservative Ideas*, WALL STREET JOURNAL, Sept. 15, 2005, at B1.

[262] Michael Janofksy, *Bill Would Let E.P.A. Relax Rules for Cleanup*, N.Y. TIMES, Sept. 16, 2005, at A18 (national edition).

[263] INSIDE EPA, Sept. 9, 2005, at 1, 6-7; BNA ENVT'L REP., Sept. 9, 2005, at 1873.

[264] Wilke and Mullins, *supra* note 261, at B9.

[265] *See* notes 48-56 & accompanying text.

[266] Wilke & Mullins, *supra* note 261, at B9.

[267] *A Shameful Proposition*, N.Y. TIMES, Sept. 10, 2005.

[268] David Brooks, *The Best-Laid Plan: Too Bad It Flopped*, N.Y. TIMES, Sept. 11, 2005.

[269] ALBERT O. HIRSCHMAN, THE RHETORIC OF REACTION: PERVERSITY, FUTILITY, JEOPARDY 72 (1991).

[270] *Id.* at 78.

[271] A NEW PROGRESSIVE AGENDA FOR PUBLIC HEALTH AND THE ENVIRONMENT: A PROJECT OF THE CENTER FOR PROGRESSIVE REGULATION (Christopher H. Schroeder & Rena Steinzor eds. 2004).

[272] Spencer S. Hsu & Josh White, *Separate Inquiry Fails to Gain Support*, WASH. POST, Sept. 15, 2005, at A15 ("The Senate voted along party lines yesterday to reject the creation of an independent panel to investigation the government's fumbling response to Hurricane Katrina.").

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Mr. BASS. Thank you very much, Mr. Verchick. You asked for unanimous consent to add some information to the record. Is there objection? Without objection, so ordered.

I am going to ask just one question. Mr. Verchick has already answered it. I would like to ask it of Mr. Olson, Dr. Wright, and Secretary Gautreaux. Is it safe for people to move back into New Orleans today? Mr. Olson?

Mr. OLSON. Well, I would agree. I would agree with what Mr. Verchick said just moments ago, which is that for many areas, there is no data available at all to answer that question. For some areas, the data available suggests that it is not safe, for example, some of the air monitoring data that is in my testimony shows that for someone to stay for more than 2 weeks is not safe, according to Federal guidelines. So, some areas, maybe it is, if we did additional testing, but we are not.

Mr. BASS. Dr. Wright.

Ms. WRIGHT. Based on the information that I have, which is none, I would have to say it is not safe, because we don't know. And also, the fact that there is so much mold around, just growing everywhere, I think that that is a problem in homes across the river in Algiers, where people, some people never left, and people are still there. I have a distant relative there, and her house just reeks of mold, and she didn't even get the water that others got. That can't be a good thing. I don't believe it is.

Mr. BASS. Secretary Gautreaux.

Ms. GAUTREAUX. I would just say that in general, where you don't have potable drinking water and wastewater treatment, there are health risks associated with that. There are some areas where that is available, and I think you have to consider that, as well as individual risk factors, respiratory problems, pregnancy, anyone who immuno-compromised. If you are going for health reasons, consider those things, and I think the population should also consider things like the communications 911 network, available hospitals, and other factors. I read a statistic the other day that 75 to 70 percent of hurricane injuries are typically associated with the recovery. So, I think all of that has to be considered.

Mr. BASS. Thank you very much, Secretary Gautreaux. The Chair now recognizes the ranking member, the gentlelady from California, for 5 minutes.

Ms. SOLIS. Thank you very much. Sorry I came in late to hear some of your testimony, but I know that the concerns that you have are very similar to what some of the members I know on our side of the aisle have as well. I am interested to get your opinion on quality and access of information from EPA. Either one of you on the panel can respond. EPA talked about getting out information, they handed out 3,500 fact sheets in the first 2 weeks, conducting interventions that removed more than 850 workers from serious, life-threatening hazards. I am wondering if there was any other materials or outreach efforts on the part of EPA regarding households, not just the workplace, but households, and what kind of information are you aware of that was put out there? I know they have a website. I don't know how many people are able to access that website, and second, have you seen any of these handouts or kits that were given out? Dr. Wright, why don't you start?

Ms. WRIGHT. Yes. I would just like to say that there is a serious problem with communication, especially for many of the 200,000 people who have been scattered across the United States, who also would like to have some information about what is going on at home. We haven't gotten any. Now, I am a little more mobile than most people that I know, and so, I am here in Washington, D.C. I am on the phone with enviros every day, so yes, I have seen one flyer put out by our Governor, but that was given to me by one of the enviros, and I was able to pull it down off of the website.

There are a lot of people who don't have access to any of those kinds of things. Another important thing that I would like to say is that there are some cultural differences between blacks and whites, and sometimes, the way that information is delivered determines whether or not it is received properly. I haven't seen any what I would consider culturally sensitive materials delivered on Katrina. I do know, because of the groups that we work with, that local organizations have been working to develop information. The Deep South Center, and the National Black Environmental Justice Network are, in fact, as we speak, trying to develop flyers to disseminate in different places where large numbers of evacuees are.

I would say that is a real weakness of the whole rebuild, return, come back home project, whatever you would like to call it.

Mr. VERCHICK. My experiences reflects what Dr. Wright would say. I would simply say walking the city, as I have been, in many different areas, and talking to lots of people who have been there, no one really has any idea of the type of environmental contamination, especially the kind that could be airborne, when it dries up, on that sludge, and then floats around.

A really good indication, if you want, is to look at the local blogs, which I do daily. Channel 4, a local TV station, and the Times-Picayune both have excellent blog sites. You can look and see what people are talking about. That is where they trade all kinds of information about what they do in the city. It is rarely talked about. The people that do talk about contamination are very misinformed much of the time. They are misinformed about a lot of things, incidentally, on those blogs. And I look at it, and it makes my blood run cold, because I know that people are operating a set of instructions. Whether or not that stuff is on EPA's site, I have seen it. It takes me a while to find it. I am not convinced that many people are getting it. What does trouble me about the CDC, EPA sites is sometimes, they will say things like we have no evidence of X, but what they don't say is we haven't tested for it yet. And that is a very misleading statement to say there is no evidence of long-term health risks when they haven't tested for long-term health risks.

Ms. SOLIS. My time is running short, but I want to throw this out there as well. We heard earlier from the EPA representative that about 80 percent of the drinking water system is back. However, 2.3 million people still don't have access, so my question is directed at our water experts here, was our system adequate before Katrina, and what is it that we could have done to help, knowing that Katrina was coming?

Mr. RAGONE. Well, I think the real reason, as I said in the last paragraph of my written testimony, for being here, is to start thinking proactively about the next one. Certainly, Katrina is a ter-

rible disaster. We have to take advantage of what we have learned there, and get a proactive strategy in place that prevents these things from happening anywhere in the country, be it natural disaster or terrorist act. We have to think proactively.

One of the concerns in many places in the country, with regard to household wells, is that poor people living in old houses have inadequate wells. What we have to do as a proactive measure is provide poor people with adequate wells, and some understanding of how to maintain them. If we do that, if we could keep people in their place, if they had drinking water, the catastrophe in the Katrina-affected area would have been lessened.

We don't want to make vagrants of our communities if we don't have to. If we installed a deep well in a firehouse, with a stand alone generator that was safe from floodwaters, raised up some way, we could have provided a water resource for these people, and we wouldn't have people migrating, swimming for tens of miles through muck and this contaminated sediment, to get somewhere that was nowhere.

We just have to start thinking proactively. And the last point is, we have two types of water in this country that are managed differently, surface water, and groundwater. If you put them together, they have a complementary function that can save us during disasters. If we use ground water when surface water is contaminated, we benefit. If there is excess surface water, we can put it in the ground. We benefit. We have a bureaucracy now, a national and local bureaucracy, that separates those functions, and takes away that complementary benefit, and that is put at risk in places.

Ms. SOLIS. They even compete with each other.

Mr. RAGONE. They can help each other.

Ms. SOLIS. Yes. Yes.

Mr. RAGONE. And right now, they are not. They are competing with each other.

Mr. BASS. The time of the gentlelady has expired. The Chair recognizes the gentleman from Pennsylvania, Dr. Murphy, for 5 minutes.

Mr. MURPHY. Thank you, Mr. Chairman. I am certainly moved by your testimony, Dr. Wright. My dad was born in Louisiana, and when I traced the Murphy family roots, I look back in the 19th Century, the thousands of Irish that came to New Orleans and died, because they were seen as animals, and even lower than slaves, as they helped to build that city in the list of the thousands who died there trying to do that. So, my heart, and that of Pennsylvanians, also go out to all of you, in as I want to make sure that we don't re-victimize the victims, and by that, I mean that we look to the people throughout the entire area affected by Hurricane Katrina as survivors and not victims. And to me, it is important, the way we don't re-victimize them is to turn this into a political game of who is to blame. And let us attack, and let us talk about it has to be an independent commission, as opposed to something Congress can do? Because I believe that automatically assumes that people in Washington, or Members of Congress, do not have the care and compassion to do that. And I would like to get that away from politics, and let us just talk about finding the right answers here, because I think you both are from Jesuit universities,

too, which I am, as well, and I respect that, because of a need to ask questions.

But let me ask a very tough question on this, of this panel. Well, some of you have said the health problems are so bad, it is no way habitable now, and I believe I am not sure when it will be in a situation to be habitable. In the North, we have areas of brownfields, where mills have been for years, where perhaps some oil and gas work have done, and basically, the EPA and the Department of Environmental Protection in Pennsylvania comes in and says you know what, it is never habitable for homeowners. Maybe you can do an industrial site here, maybe you can do some commercial development here, and pave it all over, but it is never going to be right for homeowners again, so don't consider that. If it is so serious, I mean, I think of the, what, hundreds of thousands of vehicles, that as the water came into the gas tanks, the gas flowed out. As the chemicals leaked from there, and all of the everything else, is it really to the point where someone has to ask that question, will it ever be habitable? I open it up to the panel.

Ms. WRIGHT. Well, I have been working in this area with people who have lived on top of hazardous waste site, Superfund sites, and all kinds of sites, and each time, we have been told by EPA that there is a possible cleanup for these types of sites. So, I don't believe that the city of New Orleans is so contaminated that it will never be habitable again. But I do know that if we don't clean it up right, we will end up with two thirds of the city being a Superfund site, as we have, in fact, experienced with the Agriculture Street Landfill community in the city of New Orleans, that was built on top of the New Orleans Landfill, where all of the debris from Hurricane Betsy was put. And 20 years later, you know, it is a Superfund site, with people sick and dying. So, my real concern is that the appropriate testing is done, and the right remediation is put in place and completed, and that there are no differentials in the way that is done, based on race and class. Those things, I am very interested in.

Mr. MURPHY. Are you suggesting Congress would act that way, based on race and class?

Ms. WRIGHT. No, I am not. I am saying that things have been done that way where I live.

Mr. MURPHY. Well, we want to make sure that doesn't——

Ms. WRIGHT. I wasn't talking about Congress.

Mr. MURPHY. Well, I want to make sure we don't do that, but part of it, as we are looking at tens of billions of dollars here, I am real concerned, as you are, about the safety of the folks, and I want to make sure we protect them, and part of the question is, and people are raising it around the country, and because you are there, it is so important for me to hear directly from you on this, all of you on this. Are we better off relocating the city, rather than rebuilding it there? I am opening it——

Ms. WRIGHT. Are you asking me that?

Mr. MURPHY. Well, I am asking all of you that. I mean, certainly, if I lived there, I would say I want to go home, but part of it is I am really very concerned about the public health issue you are raising, and what it would take, and if it is not—I don't know. I am asking you as experts in these issues, if it is solvable, asking

all of you that. And that is a question Congress has to ask. How do we make it safe for the public, so people go home there, but we are not just simply saying—because here is the thing: I would think there is a couple issues. We would be wrong if we simply said well, we will fix it up, but go back there. We know you are going to get sick again. I think that would be a terrible thing. Or what is it going to take to fix it to the level where people can be protected, or their health. I need to know the answers——

Ms. WRIGHT. Are we asking everyone in California to leave, because of earthquakes and all of these things that we deal with every year? I mean, that is really a strange question to me.

Mr. MURPHY. Let me answer this, because I mean no harm in this. I am trying to find out—it is much like when people live along the Mississippi River and it floods, and FEMA comes in and pays them, and it floods again, and FEMA says you are in high-risk area. We can't keep doing this. It is a matter, because we have such a huge public health concern there, I want to make sure we are not sending back to an area where they are going to get harmed. I think that would be the worst thing that we could put them in a harmful situation, and yet, we want to be compassionate, because they want to go home. I would love to see that. I am trying to find the balance. I don't mean harm in that. Please understand. I want to find how we can solve that.

Mr. VERCHICK. I think the short answer is we have to save New Orleans, and that we can. We can protect it through engineering from the floods. We can scoop up, change, pull up the contaminated areas, and over time, as we learn more, we will know what we are dealing with, and I think we will be able to do it.

One difference between the Mississippi coast and the Alabama coast and New Orleans is that New Orleans is a city over 300 years old, a cultural gem in the world, just like Venice, and just like the Netherlands, both of which are also sinking. We have the technology to save it.

Mr. BASS. The time of the gentleman from Pennsylvania has expired. The Chair would——

Ms. WRIGHT. Mr. Chairman.

Mr. BASS. Yes, ma'am.

Ms. WRIGHT. I would like to be excused. I have to catch a plane at 5.

Mr. BASS. Absolutely.

Ms. WRIGHT. Thank you.

Mr. BASS. The Chair will excuse Dr. Wright. Thank you very much for your testimony. I would also like to ask unanimous consent for members to submit questions to witnesses in writing. If there is no objection, so ordered. And the Chair recognizes the gentleman from Maine, Mr. Allen, for 5 minutes.

Mr. ALLEN. Thank you, Mr. Chairman, and thank all of you for being here today. A special thanks to Secretary Gautreaux and Mayor Rutledge. I have done what you are doing today. Sometimes, it is like watching grass grow, to not be in the room during this kind of conversation. I very much appreciate your being here.

I would like to ask some questions growing out of Mr. Olson's testimony, about EPA's role and how EPA is acting, and whether or not it is living up to its responsibility, to basically make sure

that you all are safe, and the public is safe. EPA has said that it is doing testing, but the decision on whether or not it is safe to return will be left to local authorities. It is unclear, from Mr. Peacock's testimony, who would do the analysis upon which to base those decisions.

I mean, is this a case where we have multiple people out trying to analyze a smattering of data, or what? I mean, how are we going to get there? And built into this question is really another question about, I guess this is probably for the mayor and Secretary Gautreaux, what your experience has been dealing with the EPA in the course of your efforts to get your feet back on the ground. And so, I guess maybe, Ms. Gautreaux, why don't we begin with you?

Ms. GAUTREAUX. Okay. Well, today, again, repeating what we said earlier, when you can officially come back in, a complex one that involves a lot. I will tell you from our perspective in Louisiana, EPA has been very helpful to us. We have decided on long and short-term sampling strategies. We are coordinating on information, and these are the types of things that we are providing to the public officials. We have the same concerns that have been expressed earlier about the water, drinking water systems down. People do need to be careful, especially if they are sensitive, when they go in the areas. From our perspective, EPA has not only helped in terms of strategizing and helping carrying out sampling, they also provided equipment, such as the TAGA monitoring vehicles that go through neighborhoods, planes that are able to fly over and detect leaks in facilities, and also, different components in fires. Actually, we have about 100 EPA employees over here, and we meet, and it is not just a meeting. We have them throughout the day, but every day, we get together with our other State and Federal partners, and say what is the issue, how are we going to approach it? How are we making progress in the areas that we think are directly related to public health and safety?

So, I hope that answers some of your questions.

Mr. ALLEN. Thank you very much. Mayor Rutledge, I don't know if you have had similar kind of contact, but can you comment on what it is like from your community?

Mr. RUTLEDGE. Well, sir, the monitoring is very important. The key to it is, is we are getting those tests back, or those results back. It is important for us to know what they are, because we can turn around and share that with the public. What is happening right now, there is a gap, because the people, they are looking for somebody to give those answers. And of course, what they are doing, they are calling the local officials, and they are calling their local people, saying well, where are they? How safe are we? No one is going to allow anyone to go back in their home. No one is going to allow anyone to go back into the community unless it is safe. And I think we all need to be thinking about that, No. 1, but you know, when you talk about people that don't have a home any more, that don't have a place to go, then it is going to be hard for you to keep that person out of that little block of land. It belongs to that person. Because a lot of times, you know, you adapt to the situation regardless if you want to or not.

Mr. ALLEN. Okay. Thank you. Other panelists here, any reaction to that? Mr. Olson?

Mr. OLSON. Well, I will just say a couple things. One is that I don't think there is anybody that would argue that EPA should not be much more comprehensive testing. Well, there probably are people that would argue that. But that there needs to be fair testing, wherever people are going to be returning. And that testing needs to not just be released on a website. Most of the folks that have been displaced can't log onto the web, and even if you read what is on their website, you know, you would practically have to have a Ph.D. in chemistry to understand some of what is in there. So, it is important to have understandable information accessible to people, and to be public with that, and much more comprehensive in the testing.

And we believe EPA, under the National Contingency Plan and other legal requirements, does have a legal obligation to decide whether it is safe or not. If you have got 2.3 million people with unsafe drinking water and no sewage treatment, I mean, is it really safe to be sending people into that with toxic muck, we have heard, four feet deep in many communities. You know, is that really a place people should be returning. Maybe you don't block them, but certainly, you give them protective gear, and you give them the information they need.

Mr. ALLEN. So your bottom line is you don't think EPA is fulfilling all those responsibilities.

Mr. OLSON. Well, they certainly have been trying, and I don't want to say that they are not doing anything. They certainly have got a lot of people there that are working very hard. The problem has been communications and extent of the testing, and making sure the information is getting put forward in an accurate way, and ultimately, stepping up to the plate and saying, yes, it is safe, or no, it is not. And we don't think they have really been fulfilling that obligation.

Mr. ALLEN. Mr. Chairman, my time is up, but I wondered if any of the other panelists could just answer the question?

Mr. RAGONE. Just one thing. I think there is a matter of distribution of labor here that has to be considered. I used to be with U.S. Geological Survey, and I was happy to know that we provided information to the benefit of society. EPA's research has to do the same kind of thing, and one of the limitations of funding with EPA is maybe what are the health implications of compounds A, B, C, D, and that list gets longer and longer. I think EPA has a major responsibility to know health implications of a variety of contaminants that we are facing all over the world. I think, in terms of distribution of labor, it should be the local communities, the health departments.

Mayor Rutledge said this. He wants his own people and his own communities solving the problems, but that requires training and opportunities to gain knowledge, and to exchange that research caliber information with EPA, it is just another organization, CDC and the like, and put it on the ground locally, so those communities can solve the problems in the context of their community. You will never get enough money to any Federal agency or to any community.

Mr. ALLEN. Thank you. Thank you, Mr. Chairman.

Mr. BASS. Thank you very much. I would like to ask one more question. We apparently haven't had votes yet, so we got a couple more minutes. If you ladies and gentlemen would be good enough to wait around for a second.

Long-term impact on Lake Pontchartrain and the Gulf of Mexico. Do we have any idea what the assessment is at this point? Any brief observations as to what our options are, and what the impact is going to be? I didn't even know Lake Pontchartrain existed a month and a half ago, and now, we understand exactly what the problems are and the priorities. It is my understanding that prior to the hurricane, it was swimmable, there had been a long history of trying to clean it up. Is that gone now? Perhaps. Secretary?

Ms. GAUTREAUX. Would you like me to address that?

Mr. BASS. Yes, please.

Ms. GAUTREAUX. Okay. We have actually been a partner with the local governments in the parishes that surround Lake Pontchartrain and others in improving water quality. We were very disappointed, although we understood the priority had to be to get the water off of the flooded areas in New Orleans, for public health and safety reasons.

To date, what we have seen has actually been very encouraging. The water quality samples that have been taken have been pretty parallel with big storm water events, and we are confident that the fecal bacteria will die off within a couple of days. It is salty water in Lake Pontchartrain. It is an estuarine lake. Organics will eventually decompose. We may see some fish kills associated with the oxygen being eaten up during the decomposition process, for lack of a technical explanation, and also, that metals will ultimately adhere to sediments and be buried. This wouldn't have been our preference, but we are very encouraged, as are the local citizens organizations. I say citizens—elected officials, a group, a cross-section of people of the Lake Pontchartrain Basin have been very encouraged about the results to date, that we will see a healthier lake in a few months, but we are certainly setting up, and they are helping us with a fairly comprehensive monitoring strategy in case we do see something that needs to be addressed. But so far, we are very encouraged, actually surprisingly so at the resilience of the lake, and the results of sampling to date.

Mr. BASS. Thank you.

Mr. OLSON. Could I just add one thing? There are a couple of significant issues here that need to be addressed. One is the sediments that were just mentioned. We are very concerned about the heavy metals and other organics and so on, that are going to be adhered to the sediments, some of which washed up into the Lower Ninth Ward and elsewhere, and people are going to be exposed to this. So some of it that dries up is going to turn into dust, and people may inhale it, but at the bottom of Lake Pontchartrain, we are also very worried about what is going to happen with those sediments.

The other point, you asked about the Gulf. As you probably know, there is already an area in the Gulf that is known as the Dead Zone, which grows and shrinks, but at some points is, I have heard, larger than your state, which is a pretty significant size of

an area that is sort of unfishable. A lot of that is from the upper Midwest pollution coming down, and too many nutrients. The concern is, of course, that may have been exacerbated by this flood, and I don't know if you had more to say about that.

Mr. VERCHICK. The only thing that I would add is that more testing has to be done about the heavy metals that are in Lake Pontchartrain to say that if they sink to the bottom and get buried in the sand, that neutralizes them somehow is not true, particularly when you consider that the lake itself is very shallow, about 15 feet, 20 feet deep maximum. And so, if you have got dredging going on, or other things going on, that will affect the bottom, you are going to have all that stuff coming back up in the water.

Mr. BASS. Thank you very much. The Chair recognizes the gentlelady from California for a second round for 5 minutes.

Ms. SOLIS. Thank you. I missed my opportunity to ask EPA regarding testing around Superfund sites and landfills, and I would like to get feedback from you all. If you feel that, you know, what your opinion is about what EPA has or has not been doing in those particular areas, given that we have such a large number of Superfund sites in this area.

Mr. Olson.

Mr. OLSON. Well, we feel that the testing that has been done so far has not been adequate, not just with Superfund sites. I believe there are four in Orleans Parish, one of which was the Agriculture Street Landfill that we have heard about, and they did do testing, at least one test, right around there. We think you need to do ongoing testing, first of all, and make sure you are testing the whole area for a suite of chemicals.

But what we are worried about is all these other areas that nobody is talking about. There are a large number of areas with industrial waste, with industrial facilities, tanks that have been floated and crumpled, as a result of the flooding, where there are no tests whatsoever that have been announced. We are very concerned about what that means, and what all these toxic sediments being washed up means. So that is where there needs to be independent testing, we believe, and more comprehensive testing.

Ms. SOLIS. One of the concerns I have is if we are going to be having a lot of reconstruction going on, obviously, and I am very fearful of what I am hearing, that we are not doing enough testing. We are going to be bringing people in there, to relocate and help us restore—and what kind of appropriate safety measures are we taking for this new influx of people, who are coming from different parts or regions of the United States, to come in there and work, and we are, at the same time, lowering standards. We are relaxing some of those environmental standards, as well as prevailing wages.

So I am very concerned, and would love to get your opinion, from any one of the panelists.

Mr. VERCHICK. One thing to watch, when you have got a lot of construction going on, and I noticed this the last time I was in New Orleans, is you have got this dried muck now, that may have heavy metals in it, it certainly has bacterial things and so on. And you have got lots of large machinery moving through the city now, Humvees, big trucks, you are going to have, of course, more and

more of that as construction begins. That pushes all that dust up into the air, and it is landing, now, in places that look like they had no standing water before. I mean, places that never got water, and that looked completely normal, under the circumstances, EPA has found through its air monitoring, has alarming levels of particulate matter in them. And so you know, where my kids used to go to school, which didn't get flooding, now has air that children are told they shouldn't be breathing. And you have got to keep an eye on that, and that is going to be happening many months from now, with all of the construction going on.

Ms. SOLIS. Any other comments on infrastructure? That, for me, is a big issue area. We have had some discussions in our subcommittee on the fact that, perhaps, the Congress could have done, or could do much more, in terms of helping to develop a better infrastructure, and underground storage tank protections, and a lot of things, obviously, that are going to affect our drinking water supply.

Mr. RAGONE. Yes, we didn't have time to put everything in our testimony, but even such things as strategic ground water reserves, that you identify well in advance of any need, as a place to go when you need water, when surface water is contaminated, you have a strategic groundwater reserve in a deep, confined aquifer, protected from environmental issues. Put a well into that. Secure that well from terrorists, from hurricanes, from everything. And then, when you need it, you go there, you put it on, you pump that water, just like a strategic oil reserve. It is an emergency source of water. It could be brackish water. It doesn't have to be the best water. You know, oh, it tastes a little salty. As long as the people have something to drink, to flush out distribution lines, to fight fires, we don't think about that. New York City relies on a surface water supply only. What happens there if that goes down for some reason? What are they going to drink? If they had a backup groundwater system that they could rely on, not nearly as much water, not nearly as good quality, they would be safe in their place. And that is a big issue.

Regarding the first point you make, this is a little bit out of the national ground water, but it is my old USGS hat. I think Congressman Murphy brought up brownfields. There might be, in New Orleans, a redefinition of what a Superfund is, in terms of its geographical distribution, and what a brownfield is, in terms of its geographical distribution. These contaminants you talk about floating in the air, coming back down in the soils, you could be redefining the boundaries of a brownfields based on the redistribution of a contaminant load. You could be redefining a Superfund site based on the redistribution of a contaminant load, and I think you don't want anybody living in a brownfield, you don't want anybody living in a Superfund site, and so that is part of the considerations of where do you rebuild, and where you don't rebuild, and what do you remediate, and what you don't remediate. You have to set priorities, and I think the best way to set a priority is define your zones of contamination, define the risks to people in those zones of contamination, and design a remediation plan for the city of New Orleans, with an understanding of how to protect people with these zones of contamination residing all around them.

Mr. BASS. The Chair recognizes the gentleman from Pennsylvania, Dr. Murphy, for another 5 minutes.

Mr. MURPHY. Thank you, Mr. Chairman. I just have one question, because I didn't get Secretary Gautreaux's response to the question I was asking before, if she thought that the New Orleans area, with all these contaminants that we have heard about, and bacterial issues, if that area would be reinhabitable, and how long that would take, and I would love to have your response, please.

Ms. GAUTREAUX. It will definitely depend on why the area is not being inhabited at the time. People are correct when they said we don't have a lot of sampling information in some areas, particularly industrial areas. Actually, those were some of the last areas we could get access to. We were preparing to go in those areas when Rita struck, so I think you will see a lot more sampling throughout the city. We may very well find areas that need to be remediated, and that needs to be noted, and properly remediated. In terms of large areas, I have heard references to the new Love Canal. We have not seen that to date, but we fully expect to find contaminated areas that need to be remediated. That is part of the assessment that is the next level of effort right now. So I hope that helps, but to date, we have not seen, especially in residential areas, indications that people will not be able to return to those areas. There may not be structures there, but so far, we have not seen large areas that won't be inhabitable.

Mr. MURPHY. So you are saying that—Mayor, it looks like you are nodding your head. Do you have similar thoughts, or you are—Mayor Rutledge?

Mr. RUTLEDGE. Yes, I would have to agree with that in Mississippi, also. Right now, is it being monitored and surveyed? Right now, there is not any place that the people can't come back home, but like the lady said, there might not be anything to come back home to.

Mr. MURPHY. And so my understanding is, from what you are saying, Secretary, is that you will be evaluating that. It is too soon to tell, but you will be watching that, and make decisions based upon that? Okay. Thank you.

Ms. GAUTREAUX. Exactly. We expect to find areas that need to be remediated.

Mr. MURPHY. All right. Thank you, Mr. Chairman.

Ms. GAUTREAUX. And we will make decisions.

Mr. BASS. The Chair recognizes the gentleman from Maine for 5 minutes. It is my feeling—are there going to be any more questions after this, or are we done? Okay. Very well. This is the last 5 minutes, and then we will adjourn the hearing. The gentleman from Maine.

Mr. ALLEN. Thank you, Mr. Chairman. I wanted to ask a question based on the daily printout from the EPA. There is a printout here, which speaks to debris assessment and collection, and it says that EPA personnel continue to offer technical assistance in the disposal of hazardous wastes and other debris left behind by the storm. This is throughout the area. As of 9/22, EPA has collected over 37,500 orphaned containers throughout the affected region, that are household hazardous wastes. I don't know if that is a bottle of bleach, or if it is an oil tank, really, and I wondered if anyone

could—I mean, I don't mean an oil tank. I mean, a barrel of oil. And I wondered if anyone on the panel could speak to that.

Ms. GAUTREAUX. Well, I can volunteer that EPA has been very active, particularly in the parishes north of Lake Pontchartrain, where access has been possible. They have been very aggressive in terms of collecting orphaned containers. You are right, it might be a barrel of pesticide. It could be something you would normally find beneath your sink, that qualifies as a household hazardous waste. They are preparing to do similar sweeps in the parishes that have been more heavily impacted by the floodwaters. As they get strategies to move into neighborhoods in New Orleans, they are preparing to do the same, and in St. Bernard, and Plaquemines Parishes. They have also been going to places like Home Depot, some of their public information officers, just an example where people would go when you are typically rebuilding and repairing, handing out literature, so that has actually been a very active effort to date, and it will step up as access is increased.

Mr. ALLEN. Thank you. Anybody else? Mr. Olson?

Mr. OLSON. Yes, I would just like to add the point, which is we have also heard anecdotal reports of widespread small spills and small sheens all over the place. It might be from underground storage tanks that are leaking. It might be from cars. It might be from a variety of things. We are very concerned about the long-term effects of that.

And I just wanted to add one point, which hasn't been raised, which is directly responsive to a previous question. EPA and the State of Louisiana were both under an obligation, under the Safe Drinking Water Act, there hasn't been much discussion of this, since 1996, to adopt and implement an adequate plan for provision of safe drinking water under emergency circumstances, including earthquakes, floods, and hurricanes. That was supposed to be in place after the 1996 law. It will be interesting to see why that never happened, and what is going on in other states that might have a similar situation in the future.

Mr. ALLEN. Mr. Chairman, I yield back.

Mr. BASS. Thank you very much, Mr. Allen, and I want to thank all of our witnesses here today. I want to especially thank the two of you who have been very patient. It isn't easy to conduct the kind of testimony that we have had, but it has been exceedingly informational and helpful to us. We have some big challenges ahead of us. That is clear. And I want to thank the members who were here today. And we will be submitting some questions in writing. So if there is no business to come before the subcommittee, the committee stands adjourned.

[Whereupon, the subcommittee was adjourned.]

[Additional material submitted for the record follows:]

HHS/ATSDR's Response to Follow-Up Questions for the Record
House Energy and Commerce Committee,
Subcommittee on Environment and Hazardous Materials
Hearing on Hurricane Katrina: Assessing the Present Environmental Status
9/29/05

The Honorable Paul E. Gillmor

1. Please address what you believe the health risk to be from mold in houses that were flooded?

ATSDR's sister agency, the Centers for Disease Control and Protection (CDC), has developed and disseminated educational materials on health risks from mold and prevention recommendations. Below is a summary of that information, with links to CDC's web site for more detailed information.

Molds are found in virtually every environment and can be detected, both indoors and outdoors, year round. However, flooding from Hurricanes Katrina and Rita resulted in an unusual and substantial amount of mold growth. The public and cleanup workers will be exposed to mold as they reenter and clean vehicles, residences, and businesses that have been flooded.

Most people will be exposed by breathing air contaminated by mold or mold spores. Most mold spores are small enough to get into the respiratory tract. Mold and mold spores can get into the air in a number of ways, such as people disturbing mold-contaminated materials and through mold being blown into the air from contaminated heating, ventilating, and air-conditioning (HVAC) systems. Mold spores also can be carried indoors from outdoors on clothing and other items. Although many species of mold are documented to cause infection, there are many more mold species that do not cause infection.

Infections from mold may be localized to a specific organ or throughout the body. Exposure to mold may cause illness in several ways. In general, people who are immunosuppressed are at increased risk for infection from mold. Immunosuppression can result from immunosuppressive medication, from medical conditions and diseases that cause immunosuppression, or from therapy for cancer that causes transient immunosuppression.

The major noninfectious health effects of mold exposure have an immunologic (i.e., allergic) basis. Exposure to mold can sensitize individuals, who then may experience symptoms when re-exposed to the same mold species. For sensitized people, hay fever-like symptoms and asthma exacerbations are prominent manifestations of mold allergy. Although it is likely that different mold species have different propensities to cause allergy, current data do not permit a relative ranking of species by risk of creating or exacerbating allergy.

Prolonged exposure to high levels of mold (and some bacterial species) can produce an immune-mediated disease known as hypersensitivity pneumonitis. The symptoms of this illness are similar to other kinds of pneumonia: cough, shortness of breath, fever, and chest pain.

CDC recently released an overview of possible health effects and prevention recommendations titled "Mold: Prevention Strategies and Possible Health Effects in the Aftermath of Hurricanes

Katrina and Rita", which is available at http://www.bt.cdc.gov/disasters/mold/report/. CDC and others have provided information to the public on health issues related to mold through the Internet (see, e.g., http://www.bt.cdc.gov/disasters/mold/), in hard copy to people leaving shelters, and through public service announcements (e.g., see http://www.bt.cdc.gov/disasters/hurricanes/psa_videos.asp and http://www.bt.cdc.gov/disasters/hurricanes/psa_announcerreads.asp). For more information on mold, visit http://www.cdc.gov/mold/).

2. What are the major public health hazards currently confronting the Gulf Coast region and what is being done to assess and remedy these hazards?

The destruction produced by Hurricanes Katrina and Rita resulted in several major public health concerns. Many are directly related to the significant impairment of the infrastructure needed for large modern metropolitan areas. Below are some of the actual and potential public health hazards confronting the Gulf Coast.

Health/Public Security: Currently the health infrastructure for individuals and communities, particularly within the Greater New Orleans area, is below normal capacity. This is related to physical damage to facilities, a shortage of staff, and damage to the networks that bound them. CDC/ATSDR has been working with local and state authorities along with our federal partners to help augment and restore the health infrastructure. Specifically CDC/ATSDR is working with state and local authorities to make sure that the appropriate health surveillance activities are conducted to determine the trauma and other adverse health affects that may be occurring in the city population.

Drinking Water and Waste Water: Many drinking water and waste water management facilities have been damaged by the storms. Most are now functioning at acceptable levels, but additional repairs need to be completed to bring the facilities up to pre-hurricane capabilities and to assure the protection of public health. Currently, most of the City of New Orleans receives potable drinking water. However, two areas within the city do not have potable drinking water, the Lower 9th Ward and New Orleans East. In addition, the New Orleans main east bank waste water treatment facility is not fully functional. The City, along with state and federal partners, is working to repair the drinking water and waste water systems. CDC and ATSDR staff deployed to the Greater New Orleans area are assisting in this effort.

Injuries: CDC has supported state and city health departments to assess the burden of unintentional injury and violence in the returning population, and to identify existing resources for prevention and services, based on the public health, mental health, medical and social service needs. Data monitoring has found that approximately one third of the New Orleans area hospital and clinic visits have been due to injuries. To help prevent physical injuries, CDC/ATSDR developed and disseminated guidance and information, in multiple languages and reading levels, to educate the public, clinicians, and the public health workforce on prevalent physical hazards following Hurricane Katrina, and how to avoid those hazards, including chain saw injuries, falls from ladders and roofs, motor vehicle accidents in hazardous conditions, and animal bites. In addition, because evacuees and residents returning to disaster areas are under considerable stress, CDC produced messages to prevent stress-related domestic violence, child maltreatment, sexual violence, youth violence, and suicide. Public service announcements (video and radio), fact

sheets and brochures were disseminated in evacuation centers, through state and local health departments, broadcast in retail stores, distributed door-to-door by deployed CDC staff and partners, and posted on CDC's website. The effects of Hurricane Katrina will be long-lasting and the resulting trauma can reverberate even with those not directly affected by the disaster. CDC has disseminated strategies for promoting mental health and resilience that have been developed by various organizations based on experiences in prior disasters, including resources for responders on self-care, stress management, and coping.

Carbon Monoxide (CO) Poisoning: When power outages occur during emergencies such as hurricanes, people tend to use alternative sources of fuel or electricity for heating, cooling, and cooking. CDC has documented that CO from these sources can build up in homes, garages, or campers and poison the people and animals inside. In an effort to prevent such poisoning after Hurricane Katrina, CDC developed extensive public information guidance and materials, which local officials are currently using to educate the population. See http://www.bt.cdc.gov/disasters/carbonmonoxide.asp .

Potential Sediment and Soil Contamination: Within the greater New Orleans areas that flooded, heavy metals and arsenic, semi-volatile compounds, pesticides, polycyclic aromatic hydrocarbons (PAHs), and petroleum hydrocarbons have been found in some sediment and soil. Lead, as well as most of the other compounds present in the sediment and soil, has been detected at levels that were similar to those present in the greater New Orleans area soils prior to Hurricane Katrina. The available sampling data indicate that receding floodwaters have not deposited chemicals in the sediment at levels of public heath concern, with the possible exception of localized areas contaminated by oil-spills.

There is clear evidence of sewage contamination of floodwaters and related sediments. However, CDC believes that as time goes by and the sediment dries out, the viability of any pathogens in the sediment remaining in the environment will diminish greatly. CDC continues to recommend avoiding contact with sediments as much as possible, using proper protection, and washing with soap and water following any contact.

Potential Damage to Superfund Sites: ATSDR and EPA are evaluating what impact if any the hurricanes may have had on the Superfund sites known to be within the impacted areas. As with other response activities, we will coordinate our activities and recommendations with EPA.

3. Please elaborate on the environmental health needs and habitability assessment you have performed with the U.S. Environmental Protection Agency?

Responsibilities for public health start at the local level and are a partnership effort of multiple levels of government. The Mayor of New Orleans is the ultimate decision-maker on rehabitation, but in making these decisions City officials have access to expertise in partner agencies at the state and federal levels.

CDC/ATSDR and EPA formed a joint task force to advise local and state officials of the potential health and environmental risks associated with returning to the City of New Orleans. The task force issued a report on September 17, 2005 titled *Environmental Health Needs and Habitability Assessment,* which identified a number of challenges and critical issues for

consideration prior to the reoccupation of New Orleans.
http://www.bt.cdc.gov/disasters/hurricanes/katrina/pdf/envassessment.pdf

CDC/ATSDR is committed to continuing its work with City officials and other federal, state and local agencies and the public to address environmental aspects of rehabitation determinations, for example, by providing unbiased information and suggesting key considerations related to environmental health. We also will continue to work with the Mayor and others to help rebuild the local health department.

4. With all of the standing water in the region, especially in New Orleans, are you aware of measures being taken to control the mosquito population and the threat of West Nile Virus or other similar diseases? If so, what is being done?

Mosquito abatement activities were put into place quickly throughout Louisiana and the Gulf Coast region after Hurricanes Katrina and Rita in order to control vector mosquitoes and flies.

Immediate post-storm mosquito control needs were evaluated, and where emergency control has been required the Federal Emergency Management Agency (FEMA) has provided federal assistance. CDC's role in mosquito abatement is providing technical consultation to the state, FEMA, and Department of Defense (DoD) authorities, and coordinating with appropriate state agencies and parish/county mosquito abatement personnel.

Mosquito abatement activities (e.g., spraying of pesticides that target adult mosquitoes) also have been undertaken by the U.S. Air Force (USAF) Aerial Spray Wing, parish/county mosquito control programs, and private contractors. Spray blocks (geographic areas for treatment) have been identified and treated with adulticides throughout southern Louisiana, Mississippi, Alabama, and eastern Texas. Pre- and post-spray monitoring is conducted in order to assess the efficacy of measures in reducing mosquito and fly populations. Typically, these applications result in significant reductions in mosquito populations. For example, the USAF Aerial Spray Wing treated spray blocks in Calcasieu parish (Louisiana) on October 1. Landing mosquito densities went from 50-60/minute pre-spray to 0/minute post-spray.

As recovery from the hurricanes progresses, local mosquito control programs are resuming relatively normal operations and are using contractors to meet additional needs. When possible, coordination of control efforts has been returned to the local agencies that typically coordinate and conduct these activities.

5. What risks do the chemical releases caused by Hurricane Katrina pose relative to other health risks in the area? Is CDC-ATSDR seeing any evidence of links between illnesses and these chemical exposures?

CDC/ATSDR is working with the New Orleans Health Department and the Louisiana Departments of Environmental Quality and Health and Hospitals to assess exposure to hazardous chemicals, analyze exposure pathways and conduct disease surveillance activities. In the New Orleans area we collected individual-level information on illnesses and injuries—including hazardous environmental or chemical exposures—among residents and relief or rescue workers who sought care at eight hospitals and 18 acute care facilities (e.g., clinics and Disaster Medical

Assistance Teams). CDC/ATSDR have reviewed the available chemical sampling data from EPA and have not identified any contaminant concentrations that would be expected to be of public health concern, except that there may be areas where oil spills have occurred that have sediment or soil contamination at levels of health concern. In localized areas, there is evidence of petroleum hydrocarbon contamination in remaining sediments. CDC/ATSDR is working with the Louisiana Departments of Environmental Quality and Health and Hospitals to identify and evaluate these localized areas and ensure that appropriate public health assessments and interventions are implemented. Continued monitoring by EPA and the State will be important as residents return.

CDC/ATSDR continues to provide information and resources to the public, states, medical and public health personnel, and others on preventing, identifying, and treating chemical exposures. For example, see "Protect Yourself from Chemicals Released during a Natural Disaster" at http://www.bt.cdc.gov/disasters/chemicals.asp; "Chemical Agents: Facts about Personal Cleaning and Disposal of Contaminated Clothing" at http://www.bt.cdc.gov/planning/personalcleaningfacts.asp; and recommendations on personal protective equipment and other preventive measures for cleanup and other workers at http://www.cdc.gov/niosh/topics/flood/.

6. The amount of debris in the Gulf Coast region is almost incalculable. As the cleanup and rebuilding process begins, does the removal and disposal of all that debris raise serious health concerns and what can be done to minimize these concerns as the process continues?

The amount of debris that needs to be safely managed is enormous. ATSDR staff has been and will continue to be involved on several multi-agency working groups that are developing various management and safety plans concerning debris removal, treatment, and disposal.

CDC/ATSDR staff have been providing public health guidance on how best to manage spoiled food, medical waste, vegetated debris such as trees, and building demolition material, to partner agencies at the federal, state and local levels, including FEMA, the Army Corps of Engineers, EPA, state health and environmental agencies in the impacted region, the City of New Orleans, and other local authorities. ATSDR also provides guidance on how to best monitor the potential air emissions that may be generated by the debris management activities, such as burning of debris.

The public health concerns associated with the hurricane debris management activities are physical injuries and exposure to hazardous materials. Both of these can be effectively managed. CDC/ATSDR has partnered with the local City/Parish authorities and our federal partners, such as the Occupational Safety and Health Administration (OSHA) and FEMA, to develop public guidance and information to assist in educating the public on the physical hazards they likely will face and ways to avoid injury and exposure.

The concerns regarding hazardous materials are being managed by first separating as much of the hazardous materials from the general debris waste stream as possible and managing it as appropriate. For example, EPA is collecting household hazardous materials (such as paints), reclaiming chlorofluorocarbons from refrigerators, and conducting evaluations of building-debris to identify and remove as much of the hazardous materials, such as mercury thermostats, as

possible.

Because of the very large amount of debris and the limited amount of landfill space, some form of volume reduction needs to occur. This reduction will more than likely entail some burning of debris. Despite efforts to remove hazardous material from the debris, some hazardous materials may end up being incinerated. Therefore, hazardous materials may be released into the environment, including lead from lead-based paint, arsenic from pressure treated wood, polyaromatic hydrocarbons (PAH), particulate matter, and asbestos from household insulation.

ATSDR staff has worked with EPA in connection with test burns to determine whether burning certain debris in Louisiana can be done safely and without adversely impacting the health of workers or the public. In particular, ATSDR has worked with EPA to develop the appropriate air monitoring plans for the "performance burn," to establish whether the proposed burn technology (Air Curtain Destructor) for this debris will prevent the release of significant amounts of hazardous materials into the environment.

7. What are your recommendations for State and local officials with respect to health and safety issues as they consider allowing residents back into New Orleans or other areas, and how is this information being communicated? Have any State or local officials rejected your advice on the public health suitability of certain areas concerning rehabitation?

As mentioned in response to question #2, CDC/ATSDR has been working with local, state and federal authorities to identify and restore core environmental health functions such as ensuring potable drinking water, food safety, air quality, sewage, waste water and solid waste/debris management, animal and vector control and reducing exposure to hazardous materials. However, as discussed in the response to Question #33, the Mayor of New Orleans is the ultimate decision maker on rehabitation. Our role is to share our expertise with EPA and others through technical assistance, which has been communicated through frequent communication with local, state, and federal partners.

CDC developed and disseminated over 250 separate communication materials that covered topics including, injury prevention, food and water safety, safe clean-up, animal and insect hazards, illness prevention, and many others. The materials were developed in various formats, such as posters, fact sheets, interim guidelines, and public service announcements, and disseminated through multiple channels, such as CDC's Hurricane Web site, news media, Katrina Information Network (later Emergency Response Information Network), evacuation centers, field deployees, CDC's hotline, the American Red Cross, the Salvation Army and other faith-based organizations, and other community based organizations.

As we look to the future, we have an opportunity to rebuild and redesign the environmental health sector in a way that leads to improved health for the region's residents. We have an opportunity to rebuild neighborhoods and communities that promote healthy living by including such things as sidewalks and bike lanes, parks or playgrounds, access to healthy food, and mass transit.

The Honorable John D. Dingell

Will all of the short-term and long-term costs incurred by the Agency for Toxic Substances and Disease Registry (ATSDR) in responding to the impacts from Hurricane Katrina be reimbursed or paid for by the Federal Emergency Management Agency recovery fund? If not, please identify the expenditures that will come from ATSDR's own appropriation.

ATSDR has had nearly all of its short-term costs incurred in response to Hurricane Katrina reimbursed by the Federal Emergency Management Agency (FEMA). Examples of costs incurred that were reimbursed by FEMA include emergency travel, overtime, supplies and equipment, and other ATSDR support for the response. FEMA, however, does not reimburse for salary costs of federal employees (not permanently assigned to FEMA) who are deployed in response to an emergency incident. At this point, no expenditures outside of normal ATSDR salary costs have come from ATSDR's appropriation. ATSDR has historically and will continue to support these personnel-related costs for the implementation of such activities as they fall within the mission and authority of ATSDR. Such long term costs for assisting areas affected by Katrina, however, have yet to be determined.

Responses to Questions Posed by the Honorable Paul E. Gillmor
Respectfully Submitted by Karen K. Gautreaux, Deputy Secretary
Louisiana Department of Environmental Quality
October 31, 2005

Honorable Paul E. Gillmor

1. In the weeks since the hurricane has hit, the national media coverage regarding the environmental damage from Hurricane Katrina has been extensive. Reports of a toxic stew and the entire city becoming a giant Superfund site have been made. However your testimony indicates that while damage is extreme, some of these reports have been greatly exaggerated. You state early results of lake sampling indicate common water quality impacts caused by hurricane winds and storm surge, and organic compound sampling and initial sediment samples indicate no acute health issues that would be expected from the concentrations observed to date. Do you, in your capacity as Secretary of Louisiana DEQ, feel these reports have been over exaggerated, and how do you think these reports factor into the psyche and spirit of your citizens, as many try to determine whether they will come back to the city and state at all? Do you have any personal experiences to share to help exemplify this situation?

Mr. Gilmore, thank you for giving me the opportunity to further address an issue that has created much confusion and fear among those who live and work in New Orleans, rescue workers and other personnel working in and around the floodwaters or formerly flooded areas, and others who might think of visiting or locating in New Orleans in the future.

In my capacity as Deputy Secretary of the Louisiana Department of Environmental Quality (LDEQ), and my participation in various efforts in the aftermath of Hurricane Katrina, I observed early reports of the "toxic floodwaters" and "toxic stew". As soon as it was possible to access sampling sites, LDEQ, the U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS) began sampling the floodwaters and Lake Pontchartrain, where the floodwaters were being pumped. As mentioned in my earlier testimony, the water was reported to contain elevated levels of fecal coliform bacteria and levels of lead that were beyond EPA's drinking water standard. This standard was set to be protective of a child between the age of one and six years old drinking a liter of the contaminated water each day for 350 days per year for six years. In reality, drinking water standards were not appropriate for water coming from a salty, estuarine lake from which no community or individuals get their drinking water. LDEQ shared sampling results as quickly as possible with members of the media, but reports of the "toxic stew/soup/brew" persisted. Many LDEQ staff members participated in interviews with international, national, and local press, and consistently one of the major topics requested was updates on the "toxic soup."

Pumping of the of the flooded areas in Southeast Louisiana continued until October 11, 2005, at which time the U.S. Army Corps of Engineers declared their unwatering mission complete. Sampling of the floodwaters continued until it was no longer possible to gather samples. Lake Pontchartrain sampling has continued, and monitoring will continue into the future in order to measure any potential impacts to the Lake and address as appropriate. Later water quality sampling results have been consistent with those taken earlier.

In summary, since the time of the September 29, 2005 Subcommittee hearing, the floodwater has been shown to have been unhealthy for contact primarily because of elevated levels of fecal coliform bacteria, but it was not a toxic soup. In fact, sample results indicated the water was very similar to, if not a little improved from in some cases, past large stormwater events. This observation was based on comparisons with past New Orleans Sewage and Water Board stormwater discharge monitoring reports (DMRs).

From my personal perspective, the difference between "toxic" and "unhealthy" is the difference people may have in wondering if they will ever be able to return home versus avoidance of contact with floodwaters and using proper hygiene if contact occurs. I will give a specific example of the impact of this type of portrayal on the spirit and psyche of displaced citizens and their elected officials who share and are trying to respond to their concerns.

On September 14, 2005, LDEQ sponsored a legislative briefing for state representatives from the storm impact areas in Southeast Louisiana, specifically Jefferson, Orleans, St. Bernard, and Plaquemines Parishes. The purpose of the briefing was to provide an update on the environmental impacts of the storm, activities of the agencies to date, and an opportunity for questions and answers. One of the legislators from Eastern New Orleans, Representative Austin J. Badon, Jr., said that his constituents were asking him if it would ever be safe to come home. Mr. Badon further explained that they were wondering if, after the floodwaters were gone, would they be left with areas of contamination that would prevent them from returning to their homes and businesses. Mr. Badon also mentioned that they were concerned about this issue because of the toxic soup stories being broadcast nationally. We responded referencing the same sampling information referenced above, and said we had not seen any indications of contamination that would create health risks in residential areas to date. Sampling of the residential areas had been the first priority. The department also responded that we did expect to find some areas that would need to be remediated as we gained access to sites, and would address them as we found them.

This scenario has been repeated numerous times as elected officials, individuals, business owners, displaced workers and others try to inform others or make a decision as to whether or not they should return to their city. LDEQ was recently requested to provide sampling information so that people planning conventions could decide if it were safe from an environmental perspective to hold them in New Orleans. Not only has the "toxic soup" portrayal impacted the psyche of citizens, it has impacted their economic and social futures as well.

2. One issue that generated extensive discussion during the hearing was attempting to discern which government entity has the ultimate and final role in informing the citizens of New Orleans and other devastated areas when the conditions, from an environmental assessment perspective, are safe for return and for long term habitation. Can you please further state for the record how your agency, in cooperation with federal, state, and local officials, works in guiding local officials in trying to disseminate information on long term habitation of certain areas? Do you agree that is it the local governments' role to make these final decisions?

The LDEQ has worked in conjunction with various federal, state, and local agencies to gather and share environmental information with local officials so that they can consider that information in the re-entry decision making process. LDEQ and other agencies developed and implemented monitoring plans for the parameters that would be important from an environmental risk perspective and shared those with local officials and others. LDEQ provided the Louisiana Department of Health and Hospitals (DHH) with environmental assessment information, and DHH made recommendations to local government after considering the information DEQ and other agencies provided.

Discussions take place with local officials in regular briefings and on an as needed basis. For example, the City of New Orleans has a daily briefing in which DEQ and other state and federal agencies participate. One of the routine topics is the environmental condition of the city, and what steps need to be taken to restore functions (wastewater treatment) or achieve progress on an issue that is a public health and safety threat (ex., debris removal). Agencies also participate in meetings convened by local officials for citizens in which they provide information and answer questions. LDEQ is working with other agencies to improve our communication process in the storm impact areas and areas hosting citizens displaced by the storms, and we are also examining our website and other information to see if we can improve our communication to citizens and decision makers.

Because long term habitation is an issue that must include public safety, health, and other infrastructure issues, LDEQ believes that it is local government's role to make final decisions on re-entry and rehabitation. We do believe we have a duty, however, to take action if a local government enacts a policy that would citizens at risk based on information from our assessment efforts. To date that has not happened, and the department's action would be determined based on the specific circumstances.

3. Do you agree with Professor Verchick and Mr. Olson's assertions that it is too early to begin habitating the New Orleans metropolitan area again? Have the sampling results and other environmental testing revealed more widespread problems than were revealed in your testimony? Please update the Subcommittee with any new testing data that may have been released since the hearing.

LDEQ believes that there are many individual health and safety issues that should be considered when making the decision to rehabitate New Orleans, however, LDEQ's assessment of the available data outside of known release areas (i.e., Murphy oil) indicates no environmental conditions which cause concern for the rehabitation of New Orleans.

The results of the sediment sampling (sediments deposited and redistributed during the flood event) and air sampling are the most applicable to review in considering the habitability of New Orleans. The flood waters are gone and present no potential ongoing or future exposure. Summaries of assessment results are below, and the results are available on the LDEQ and U.S. EPA websites.

Sediment sampling has shown a few compounds with concentrations above the associated, very conservative, screening level. Volatile compounds (such as benzene) volatilized quickly after the flood event and the associated releases from vehicles and other releases are no longer expected to be present in the dry sediments. Thicker layers of sediments will be removed per the Corps of Engineer's debris management plan to the extent practicable.

With the possible exception of semi-volatile petroleum-related products (TPH-diesel range organics and TPH-oil range organics), the concentrations of the compounds detected in sediments are indicative of levels and patterns of distribution observed historically in the metropolitan New Orleans area and would be expected in an older city near heavily traveled transportation, industrial and commercial corridors.

Petroleum-related products present more of an aesthetic concern rather than a risk to human health. Their presence will decrease over time and immediately with the removal the removal of the sediments. In addition, the residual levels of TPH that may remain on the surface after sediment removal will be degraded by the sun and weathered away over time. It is not anticipated that TPH will cause risks to residents moving back in with the assumption that exposures will be managed with routine hygiene practices (washing hands, avoiding prolonged contact, etc.). The reestablishment of grass and lawns will also be beneficial to reducing the small residual risk posed by the TPH materials.

Sediment sampling subsequent to testimony given September 29, 2005 has shown no additional issues than those presented previously. Sediment sampling has been limited since that date, however, the sediment samples that have been taken produced results consistent with those presented to the committee.

From an ambient air perspective, DEQ has analyzed more than 30 air samples taken in the area impacted by Hurricane Katrina. The results show that the air quality in the area has returned to pre-Katrina quality in most areas.

DEQ scientists and toxicologists have also studied data from the U.S. Environmental Protection Agency's air-canister samples and mobile air-sample lab, known as TAGA. Both agencies' data show air quality meets all federal standards for primary pollutants.

Before the hurricanes, DEQ operated seven air monitors in southeast Louisiana. Currently, the only monitor running in the New Orleans area is the Kenner monitor. That monitor has shown the air quality in Jefferson and Orleans area to meet federal standards. Hahnville and Marrero are also currently operational, and have recorded no violations of the federal or state standards. The department is in the process of buying replacement and additional equipment and finding appropriate location/housing for monitors throughout the area.

There are two observations of note in the analysis of air data since Katrina. As noted above, neither concentration was observed for a prolonged time, both were observed for a short period (one reading on one day) and have not been observed since.

- A sample taken near a fire on September 5, 2005 near Veterans and West End Boulevards showed benzene concentrations above minimal risk levels. The level of benzene and other petroleum-related compounds decreased after the fire and has not been observed since.
- There was an elevated measurement of an ozone concentration on October 19. However, the level observed was below the National Ambient Air Quality Standard (NAAQS) and was possibly associated with a mobile source near the airport. No other elevated ozone measurement has been recorded.

The ambient air conditions, as portrayed by the ambient air sampling results gathered by both DEQ and EPA, do not prevent the rehabitation of the greater New Orleans.

The issue of habitability of the greater New Orleans area is potentially more affected by confined incidents and releases as well, as nuisance odors and indoor air quality (mold). DEQ has not gathered or reviewed data related to mold and other indoor air issues. It is our understanding, based on conversations with Department of Health and Hospitals (DHH) personnel, that it is the responsibility of DHH to address mold and indoor air issues.

4. Was Lake Pontchartrain in compliance with all Federal environmental water quality laws prior to the storm? Can you update the Subcommittee on any further lake testing being done by LA DEQ and any further assessments of long term water quality damage? Have you worked with the Lake Pontchartrain Basin Foundation in monitoring and sampling?

Lake Pontchartrain was not meeting the designated use of primary contact recreation (swimming/wading) due to the issuance by LDHH of a south shore swimming advisory because of bacteria levels. Most data on the lake shows the lake as fully supporting designated uses, including primary contact and fish and wildlife propagation, but elevated bacteria levels associated with storm water discharges from the south shore resulted in the impairment designation. Since the storms, water sampling in the lake and surrounding estuaries, including the flood waters of the East Bank Greater New Orleans area, has been exhaustive, with over 500 water samples collected. The sample data was collected to initially determine if the flood waters posed a health risk to evacuees and responders, then was expanded to include impact assessment of the flood waters on Lake Pontchartrain. The sample results revealed high bacteria counts associated with the commingled flood waters and untreated sewage within the city collection lines, but no specific chemical contamination above levels of concern. Most recent bacteria data for the lake show very low levels, all of which are low enough to support swimming.

Even though the chemical analyses of the floodwaters showed no levels above concern, the DEQ and the USFDA have initiated seafood tissue collection to confirm the safety of the finfish and shellfish in Lake Pontchartrain. Preliminary results of fish tissue from Lake Pontchartrain have been good and to date the issuance of a consumption advisory does not appear warranted. Additional sampling in Lake Pontchartrain continues and tissue sampling efforts by NOAA and EPA in other coastal areas are revealing similar results. Many oyster harvesting areas had been closed until Molluscan Shellfish Program data could be used to re-open them. Many beds have been reopened in the southeast portion of the state with expectations that the remainder of the oyster harvesting areas will be confirmed as ready to re-open shortly.

LDEQ has worked with the Lake Pontchartrain Basin Foundation (LPBF) over many years on a number of initiatives designed to improve the water quality of the Lake. Those initiatives included nonpoint source water quality improvement projects, education initiatives, implementation of the Beach Act. The LPBF has provided sampling information for many of these projects, including fulfillment of state Beach Act requirements.

Specific to post-Katrina monitoring, the LPBF has partnered with DEQ by providing water quality sampling information on the tributaries feeding the Lake. LDEQ worked with LPBF in developing a sampling plan for the entire Lake that will measure potential storm-related environmental impacts, share the results of monitoring, and investigate other potential partnerships that will benefit the long-term health of Lake Pontchartrain.

U.S. Environmental Protection Agency Responses
to Follow up Questions from the
September 29, 2005 House Energy and Commerce
Subcommittee on Environment and Hazardous Materials Hearing on
the Impact and response to Hurricane Katrina

The Honorable Paul E. Gillmor

Question: Did the Administrator exercise his emergency powers under Sections 1431 or 1442(b) of the Safe Drinking Water Act in response to drinking water damage and access issues during Hurricane Katrina? If so, where and in what circumstances? If not, why not?

Response: EPA can use its Section 1431 authority to authorize use of water which does not meet federal drinking water standards where such use of water is necessary to avoid an imminent and substantial endangerment to public health, such as the lack of an operational public water system. On September 14, 2005, EPA Region 4 issued a letter under Section 1431 authorizing the General Electric Company to temporarily use non-potable water for personal hygiene under certain restrictions for its contractors working on projects in Mississippi in areas affected by hurricane Katrina.

Section 1442(b) covers emergency grant-making authority. It allows the Administrator to provide technical assistance and to make grants to states or publicly owned water systems to assist in responding to and alleviating any emergency situation affecting public water systems. EPA has not used this grant authority, as other financial mechanisms have been able to meet the needs of the affected drinking water systems.

Question: Those who oppose giving the Agency more statutory flexibility to respond to the legal barriers confronting response and recovery activities after a catastrophic natural disaster; have argued that the use of "enforcement discretion," rather than giving the Agency clear legislative powers, is the best way to handle this matter. Please state whether this use of "enforcement discretion" immunizes the Agency from challenges under the citizen suit provisions under all major Federal environmental laws? Would clear legal authority help resolve this issue?

Response: Agency use of enforcement discretion is not reviewable under the citizen suit provisions of the major Federal environmental laws. Typically, citizen suit provisions do not allow citizens to sue EPA for failure to take action that is committed to agency discretion. Decisions regarding whether or how to enforce the environmental statutes are generally committed to agency discretion. See, Heckler v. Chaney, 470 U.S. 821, 831-33 (1985). For that reason, we do not believe that citizen suits brought to constrain the Agency's exercise of this discretion would be successful or that additional legal authority is necessary to resolve this issue at this time. It is important to note, however, that even where EPA in its discretion has determined that enforcement action would not be appropriate, such a decision by the Agency does not necessarily shield regulated entities form the possibility of citizen suit enforcement actions for events occurring during response and recovery.

Question: A few groups have already begun publishing estimates of how much it will cost to cleanup or restore certain services, such as drinking water. However, some of these groups also acknowledge that the data is still insufficient to know exactly the scope of the problem. Norman Rabkin, on behalf of the Government Accountability Office, testified before our Subcommittee on Oversight and Investigations that the cleanup of contaminated sites from Hurricane Katrina will take "tremendous amount of coordination and funding" and that the "level of effort needed and the cost of decontamination and cleanup will take some time to determine." First, please discuss any lack of coordination faced by your agency and whether it is even too early to make a "ballpark" estimate of how long it will take to get a meaningful estimate?

Response: EPA has not encountered coordination problems to date. We continue to work with federal, state and local officials as delineated in the National Response Plan. There are still a number of factors to be considered and decisions that need to be made about long-term recovery efforts. However, we are engaged in a number of debris management activities and ongoing hazardous waste cleanup. We continue to provide estimates to FEMA and receive mission assignment extensions as the need arises.

Question: According to testimony provided by the Inspector General of the EPA at a hearing by the Subcommittee on Oversight and Investigations, EPA is receiving $135.1 million from the Federal Emergency Management Agency to perform relief and recovery work, so long as the costs do not exceed this amount. The EPA IG further testified that half of this money that FEMA has allocated has been passed on to the Coast Guard, leaving $67.8 for EPA activities, and that EPA has obligated $57.1 million, with $41.3 million going to the Coast Guard. Please clarify: (1) how much money the Agency has been allocated, (2) the status of your existing resource balance, and (3) whether FEMA or other agencies have complicated your mission through spending allocations or other restrictions on the use of this funding?

Response: As of January 22, 2006, EPA has received $744 million in mission assignments for Hurricanes Katrina and Rita from FEMA. In addition, EPA has received $3.5 million from the Corps of Engineers for Hurricane Katrina related activities. Total obligations equal $420.2 million. Of these total obligations, $107.2 million is a direct pass-through to Coast Guard. $327.3 million is available for obligation.

EPA has had good coordination with FEMA and other agencies thus far and has not encountered complications in carrying out the mission due to spending allocations or other restrictions.

Question: According to testimony provided by the EPA IG at a hearing by the Subcommittee on Oversight and Investigations, the EPA IG plans, within six months, to complete reviews of EPA efforts on protecting drinking water and stabilizing Superfund and other hazardous waste sites. Do you think six months is an appropriate period of time in which the IG will be able to make a comprehensive report on all your efforts on the Gulf Coast?

Response: We anticipate that the IG should be able to gain a fair understanding of the Agency's emergency phase activities within their planned six month time period.

Question: On September 23, 2005, the American Water Works Association (AWWA) issued a report that claimed three-quarters of all public water systems in the FEMA designated high-impact counties were affected by hurricane or related storm damage, resulting in overall costs of $2.25 billion just for hard capital assets, such as pipes and plants -- $650 million for 885 groundwater systems serving fewer than 10,000 people and another $1.6 billion for 47 water systems serving larger communities. Do AWWA's findings mesh with what EPA has observed in its assessment of the damage?

Response: It has been a challenge to gain an understanding of the true extent of financial damages incurred by public water systems in the areas impacted by Hurricanes Katrina and Rita. In the first month after the storms, affected States and EPA were busy trying to determine the immediate needs for facilities to allow them to provide water. The focus was not on identifying long-term costs associated with bringing the systems back to their pre-hurricane condition. We have been continually collecting assessment data and our intent is to include actual needs identified by EPA and FEMA when completing applications for FEMA Public Assistance funding.

Question: I note your testimony estimates that Agency personnel rescued 800 people from life threatening situations before you were able to begin to address the task for which you were sent to the region. How long did it take from the time EPA deployed along the Gulf Coast until the weather and life-threatening conditions stabilized sufficiently for your agency to carry out environmental testing?

Response: Assisting search and rescue operations in New Orleans was a priority for EPA in the days immediately following Hurricane Katrina. However, EPA did not wait to begin environmental assessment activities in other parts of the affected States. EPA began overflights of Hurricane impacted Gulf Coast areas starting on August 29, 2005 using its Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft. Using remote sensing equipment, the ASPECT aircraft can assist in locating and identifying oil and hazardous chemical releases. EPA also deployed eight assessment teams to other impacted areas on August 31, 2005. EPA field teams began assessing water systems in affected areas on September 3, 2005. Development of a sampling plan for testing of the floodwaters and sediment began immediately and sampling of the floodwaters began on September 3, 2005.

Question: Your testimony mentions the challenges posed by the huge amount of debris that needs to be disposed. Under RCRA, most states drive the decisions on the disposal of these items. What is your working relationship with these states? Since EPA is sorting out this debris to ensure that hazardous and solid waste materials are separated for disposal, how much longer do you anticipate debris removal to take place and are there capacity or hauling costs that EPA envisions making speedy removal slower or more difficult?

Response: EPA has been actively involved in working with the States in a number of ways. First, the Unified Incident Command System is in place and provides the opportunity for EPA, States, local governments, and other Federal Agencies to work closely in a coordinated fashion. EPA has provided personnel directly to the Gulf Coast to assist States in debris management

issues. Debris management conference calls were established on a daily, then weekly basis and provided a real-time opportunity for States and EPA to listen and respond to debris management issues. EPA has also provided regulatory clarification and technical assistance to the States on open-burning, reopening of closed landfills, structurally unsound buildings, handling refrigerant containing appliances/vehicles, creation of solid waste staging/storage areas, and recycling/reuse. EPA has also reviewed and supports the debris management plans developed by Louisiana and Mississippi. Further, EPA, has augmented these State plans by providing additional guidance on debris management designed to assist the States and the US Army Corps of Engineers with debris management issues. Although it is still not possible to provide exact time frames for completion of debris removal, EPA continues to work closely with the States and the US Army Corps of Engineers on this issue. At this time, we do not anticipate that capacity issues or hauling costs will delay the process.

Question: Some early post-storm reports from New Orleans, characterized the city as something of a "toxic jambalaya." In your testimony, you mention that EPA and the Coast Guard have investigated over 400 sites and only found 5 major oil spills. Please characterize the environmental threat of the 400 sites. Of the 5 major spills, how many affected soil, groundwater, or other sources of drinking water?

Response: Since the beginning of the emergency, EPA and the US Coast Guard (USCG) have responded to a variety of releases of hazardous materials and oil. These have ranged from clean-up of hardware stores to a few very large oil spills.

Regarding major oil spills, as of this date, there have been six major and three medium spills as classified by the National Contingency Plan. Ground water impacts from the major oil spills are thought to be insignificant due to the flood event, and naturally high water table in South Louisiana. Crude oils generally float on water, and natural oil weathering quickly results in the loss of the more volatile and more water-soluble components. Municipal drinking water in this region is derived from the Mississippi River. While there were oil spills on the river, the water intakes are located above the major spills and the intakes themselves are below the surface. The municipalities also maintain water monitoring systems to detect environmental pollution and insure water quality. In addition, we note that flood waters in New Orleans in the immediate aftermath of Hurricane Katrina contained oil as well as pathogens and other hazardous substances resulting from the inundation of urban and industrial areas.

Some of the oil spills resulted in soil contamination, and where the contamination is in industrial and public upland areas it is being cleaned to meet State of Louisiana risk based standards. The Murphy Oil site is an oil spill that affected a private upland residential area. This site is also being cleaned up according to Louisiana Risk Evaluation/Corrective Action Program (RECAP) standards by Murphy Oil, the potentially responsible party with oversight from the Louisiana Department of Environmental Quality and EPA. Oil contamination in coastal marsh sediments is being mitigated to the point where there is an environmental benefit.

Question: What does a visual inspection of a Superfund site provide you in the way of further environmental damage? Do any of the 24 sites in the region require an emergency response or removal action?

Response: EPA performed initial assessments at all the National Priority List (NPL) sites in the areas of Louisiana, Mississippi and Alabama that were potentially affected by Hurricanes Katrina and Rita. Visual inspections were conducted to determine if these sites had sustained actual storm damage that warranted additional assessment. EPA is conducting further assessments and confirmatory sampling at all the NPL sites that sustained flooding or other related storm impact. To date, EPA has not found that any of these sites require an emergency response. Information on further assessments, including data on samples collected, is being posted on the EPA website as the information becomes available.

Question: Your testimony mentions that a detectable level of several contaminants was found in sediment testing, but e.coli, arsenic, lead, and some petroleum derivatives were found at levels above Federal standards. Is this true? Is it true that just because a contaminant registers, and is present during a test, it does not always mean that the detection is harmful to human health? Do you believe you have taken enough samples to get a meaningful picture of the environment in the affected area? Are more tests planned and what is your schedule?

Response: Although no federal health exposure value exists for flood water sediment. EPA and the Agency for Toxic Substances and Disease Registry (ATSDR) examined drinking water exposure values and dermatological contact information for contaminants found in the sediment samples from New Orleans to inform our health recommendations. EPA's and ATSDR's exposure values and sampling data provide a good basis for reliable health recommendations for the public and responders.

EPA tested for chemical constituents in flood water sediment samples. Most of the chemical constituents that EPA found were at concentration levels that do not pose a hazard to human health. EPA has found that some sediment samples contained E. coli, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total metals, pesticides, and total petroleum hydrocarbons, some of which were detected at elevated levels. On the basis of these findings, EPA recommended that people avoid contact with the sediment. EPA further recommended that individuals who did come in contact with floodwater sediment should wash with soap and water.

Initially, EPA's focus was on characterization of short term effects. In November, the focus shifted to the characterization of long term effects. EPA is currently working closely with the Louisiana Department of Environmental Quality to resample areas where the LDEQ or EPA criteria associated with long term effects were exceeded.

Honorable John D. Dingell

Question: How many hazardous waste storage tanks permitted under the Solid Waste Disposal Act are located in the area affected by Hurricane Katrina? How many have been assessed to date and how many sustained damage or resulted in spills or leaks? How many remain to be assessed?

Response: Hazardous waste storage tanks will generally be found at Resource Conservation and Recovery Act (RCRA) Treatment, Storage and Disposal facilities (TSDs) and Large Quantity Generators of hazardous waste (LQGs).

EPA Region 6 and the Louisiana Department of Environmental Quality (LDEQ) have at this time identified 428 TSDs and LQGs in the affected area in Louisiana. EPA and LDEQ staff have conducted a range of activities, from flyovers to site visits, and have focused on the most affected areas and have not found any leaks of significance to date.

EPA Region 4 has identified 66 TSDs and LQGs in Alabama and Mississippi within the area impacted by hurricane force winds. The majority of the operating TSDs have been visited. There are no known reports of offsite spills or leaks.

Question: It has been reported in the media that several thousand underground storage tanks were located in the area affected by Hurricane Katrina. Please provide the latest information the Environmental Protection Agency (EPA) has on the number of underground storage tanks in the area affected by Hurricane Katrina. How many have been assessed to date by EPA or the appropriate State agencies or officials? Of the tanks assessed, how many were found to be leaking or damaged? How many of the underground storage tanks in the area affected by Hurricane Katrina were undergoing corrective action and what effect did the storm have on corrective action activities? What is the estimated cost to deal with the environmental damage from underground storage tanks as a result of Hurricane Katrina?

Response: Approximately 1700 UST facilities are estimated to have been in the hurricane impact areas. The affected states identified approximately 800 facilities that may have had hurricane related damage and are in need of preliminary site assessments. Through FEMA's mission assignments, EPA and state inspectors have conducted preliminary inspections to determine facility operability at these facilities. A relatively small number of facilities have had site assessments to test for subsurface contamination, though EPA does not have a specific accounting of the number of sites. In addition to the actively operating facilities, approximately 350 facilities in the impacted area were undergoing remediation at the time of the hurricanes. EPA does not have an accounting of the number of these facilities that have been identified for damage to corrective action equipment, nor of the number of facilities that have undergone additional assessment to determine the affect of the storm on the existing contamination.

The Agency's preliminary estimates are based on limited information and require more detailed evaluation. The vast majority of costs are attributable to the assessment and cleanup of new

releases with a smaller amount for assessment and repair of ongoing remediation sites, and for compliance inspections once facilities resume operation.

Question: The EPA daily report of October 5, 2005, stated that 15 Superfund sites in the hurricane affected area of Louisiana, three Superfund sites in Mississippi, and six Superfund sites in Alabama had received initial assessments. Please provide specific details about the results of the assessments. Did EPA discover whether caps or other remedial actions had been damaged? Had contamination spread from its initial location? If so, please describe the migration or spread of the contamination. What is the cost associated with repairing or correcting the damage at each site or remediating any releases due to Hurricane Katrina?

Response: Initial assessments were conducted to determine if these National Priorities List (NPL) sites had sustained damage from Hurricane Katrina that warranted additional assessment. Based on the initial assessments, EPA did not find that any of the impacted sites required emergency response actions. EPA also did follow-up assessments at all of these sites after Rita. EPA has now collected confirmatory samples at all 24 sites and will post data from these samples as results become available. EPA will use the data from these samples to inform any determinations regarding the potential release of contaminants.

Question: Was any Superfund site adversely affected by Hurricane Rita? If so, please describe the adverse impacts or releases associated with Hurricane Rita at each site.

Response: Twenty-eight sites in Texas and five sites in Louisiana were in areas affected by Hurricane Rita. Three of the sites in Louisiana had also been in the path of Hurricane Katrina. EPA conducted initial assessments at all of these sites and determined that no further assessment was required at sixteen sites because no releases were observed and these sites were west of the FEMA declared counties and parishes. EPA completed confirmatory sampling at the other sites and will post data regarding the results of these samples as it become available.

Question: As of October 10, 2005, EPA reported that it had collected over 112,000 household hazardous waste/orphan containers throughout the affected region. Based on the labels or residue in the container, how many of these contained chemicals or other hazardous materials that were released into the environment? Please identify the most significant release of chemicals into the environment.

Response: Based on data collected from samples of floodwater and floodwater sediment, arsenic, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total metals, pesticides, and total petroleum hydrocarbons have been detected. While some of the compounds detected could have resulted from household or other hazardous debris, some of the chemicals may be related to submerged vehicles or were released from old daily-use contamination that has been in the soil for some time. The most significant releases of chemicals into the environment were associated with large scale oil spills such as the one that occurred at Murphy Oil.

Question: Are all of the hazardous components of household appliances, such as freon from refrigerators, being removed prior to recycling or disposal? What percentage of the household appliances that are being collected is being recycled rather than disposed in landfills?

Response: To the extent possible, freon from refrigerators is being removed and the refrigerators are being recycled. EPA, States, the US Army Corps of Engineers and local officials are involved in these activities and exact practices vary depending on who is actually conducting the activity. Where EPA is handling this material, freon is being removed and the refrigerators recycled. In cases where other entities are performing this work, EPA has provided guidance and technical assistance to help ensure that refrigerators are being handled in an environmentally sound manner. In St. Tammany Parish where EPA is responsible for collection and processing of all white goods, 100% of refrigerators and all other white goods are being recycled. Recycling data for all other parishes is maintained by the USACE or local officials responsible for these activities.

Question: How many chemical spills has EPA responded to? Please identify the magnitude and nature.

Response: As of January 22, 2006, EPA has conducted emergency responses to approximately 236 releases of oil and hazardous substances in the affected areas. These have ranged from clean-up of hardware stores to a few very large oil spills. At this time, we do not know of any uncontained releases. EPA conducts emergency responses based on requirements identified through National Response Center reports, surveillance, and assessment activities. An Emergency Response includes mitigation of a potential or actual release that warrants immediate attention. These numbers are in addition to hazardous debris collection activity associated with collection of orphan containers and household hazardous waste.

Question: Will all of the EPA's short-term and long-term costs associated with response to Hurricane Katrina be covered by the Federal Emergency Management Agency (FEMA) recovery fund? Is there a written agreement that these costs will all be reimbursed by FEMA? If not, what assurance can you provide that the Safe Drinking Water Act, Superfund, and Solid Waste Disposal Act programs and their appropriated funds will not be affected by response activities related to Hurricane Katrina?

Response: To date, FEMA has provided EPA with mission assignments to cover all response activities in the hurricane affected areas. We are working closely with FEMA on this issue and anticipate that FEMA will continue to provide Stafford Act funding to complete all of the ongoing work currently being performed through Mission Assignments. There are three exceptions that we should note. First of all, FEMA does not cover base salary costs for non-Superfund appropriations. Secondly, EPA decided to conduct assessments and sampling at Superfund NPL sites and that will be covered by the Superfund appropriation. Thirdly, EPA decided to use the Vessel BOLD to conduct limited coastline water monitoring and that will be covered by the Environmental Program Management appropriation.

Question: What is the EPA cost estimate to repair drinking water infrastructure damaged by Hurricane Katrina? Do you agree with the preliminary estimate of 2.25 billion dollars by the American Water Works Association? If not, please indicate why not.

Response: It has been a challenge to gain an understanding of the true extent of financial damages incurred by public water systems in the areas damaged by Hurricanes Katrina and Rita. In the first month after the storms, affected States and EPA were focused on trying to determine the immediate needs for facilities to allow them to provide water. We have been continually collecting assessment data and our intent is to update the estimate to include actual needs identified by EPA and FEMA when completing applications for FEMA Public Assistance funding.

Question: Please give us your cost estimates to clean up each of the following:

1) Contaminated soil and sediment;
2) Contamination from oil spills;
3) Contamination from chemical spills; and
4) Contamination from hazardous waste storage tanks.

Response: In areas where sediment samples contained contaminant levels exceeding Louisiana Department of Environmental Quality and EPA criteria, further investigation is underway to adequately characterize the nature and extent of contamination. Should an area be found to pose an unacceptable risk after confirmatory sampling, EPA will work with LDEQ and FEMA to ensure proper removal and disposal under the NRP. These efforts are underway and at this time, a cost estimate cannot be accurately provided.

There are still a number factors to be considered and decisions that need to be made about long-term recovery efforts. However, we are engaged in a number of ongoing oil and hazardous waste cleanups and debris management activities. We continue to provide estimates to FEMA and receive mission assignment extensions as the need arises.

Question: The Joint Task Force Report on Environmental Health Needs and Habitability Assessment issued on September 17, 2005, stated that "a comprehensive sampling and testing of a broad array of toxic material will be required to identify any widespread contamination or selected hot spots." Is there such a comprehensive sampling and testing plan in place? If so, when was it finalized? What areas remain to be sampled and tested? Are residents being allowed to move back into homes and neighborhoods prior to the conclusion of the sampling and return of the test results? If so, why, and under what circumstances? How are returning residents being advised of the test results?

Response: Immediately following the hurricanes, in coordination with the state of Louisiana, EPA developed and implemented a sampling plan for floodwaters and related sediment. The floodwater has receded and the sediment sampling data provides information regarding potential hazards for responders and the general public. EPA is continuing to collect sediment samples associated with the receding floodwaters. We are working closely with LDEQ on determining

additional sampling needs to assist state and local governments with their reoccupation and cleanup decisions. All laboratory data is posted on the web once it undergoes EPA's quality assurance process.

In order to reach as many of the residents returning to New Orleans as possible, EPA has been disseminating information through the EPA website, print and broadcast media, fliers, and local officials. EPA has posted sampling data results and associated health recommendations on the Agency Web site. The Agency will continue to post new sampling data as the information becomes available. EPA representatives have been participating in frequent press interviews with newspaper and broadcast media both from the affected areas of the country and from national sources. To date, EPA has distributed more than 1,000,000 informational fliers in impacted areas of Louisiana. EPA representatives have met with Louisiana Parish officials to share information on EPA activities and sampling data. In addition, EPA has enlisted the help of Parish officials and other federal officials in distributing EPA fliers.

Question: Ms. Karen Gautreaux, Deputy Secretary of the Louisiana Department of Environmental Quality (DEQ), provided the Subcommittee with a preliminary cost estimate of $24.48 billion for removal of hazardous wastes from known generator, commercial storage facilities, and remediation of rail car spills. Does EPA agree with the preliminary estimates of the Louisiana DEQ? If not, what comparable cost estimates does EPA have?

Response: At this time, it is too early for EPA to estimate the cost for removal of hazardous wastes from known generator, commercial storage facilities, and remediation of rail car spills.

Question: How many full-time equivalent positions (FTEs) from the Superfund program have been diverted to the Gulf Coast in the aftermath of Hurricane Katrina? Has this resulted in a slowdown or delay of Superfund response actions? Has the diversion of FTEs, particularly the on-scene coordinators, resulted in a slowdown or delay in removal actions? If so, please identify each site where a response action or removal action has been delayed.

Response: EPA has had a wide range of employees deployed to the Gulf Coast in response to Hurricane Katrina. While many of these employees are from the Superfund Program, we have also called upon employees from other program offices from across the agency. The number of employees deployed has varied over time. As of January 22, 2006, we have 153 EPA employees deployed for the hurricane response.

The Agency has attempted to respond to Hurricane Katrina without major disruption to the removal program. Agency resources from various offices in all ten regions and headquarters have been involved in the response effort. In some instances Remedial Project Managers have been able to contribute to maintaining contractor oversight at removal sites and On-Scene Coordinators have maintained contact where possible through email and conference calls. We will continue to evaluate this situation and plan to do a detailed analysis during the second quarter of FY 2006.

The Honorable Tammy Baldwin

Question: Was there discussion during or after the hurricanes about the Inspector General's (IG) post-9/11 report highlighting how the White House influenced the Environmental Protection Agency (EPA) public communications (press releases and statements) after the terrorist attacks? All press releases about the potential health effects from World Trade Center debris had to be reviewed and approved by a member of the White House's Council on Environmental Quality – a group made up of attorneys and political operatives – not scientists and physicians. The IG report detailed several instances where the Council on Environmental Quality made changes to EPA statements by adding reassuring information or deleting cautionary information about the health risks at Ground Zero

Response: EPA Senior Executives involved in the hurricane response effort were directed to review the Office of the Inspector General's evaluation report "EPA's Response to the World Trade Center Collapse: Challenges, Successes, and Areas for Improvement."

Question: Has the White House designated anyone from the Council on Environmental Quality or any other contact person in the White House to review, edit, and/or approve any EPA public communications, such as press releases or advisories, in response to Hurricane Katrina or Hurricane Rita?

Response: The White House has not designated anyone from the Council on Environmental Quality or any other contact person in the White House to review, edit, or approve EPA public communications in response to the recent hurricanes.

Question: If so, who has been designated to review, edit, and or approve EPA public communications relating to Hurricane Katrina or Hurricane Rita?

Response: The White House has not designated anyone from the Council on Environmental Quality or any other contact person in the White House to review, edit, or approve EPA public communications in response to the recent hurricanes.

Question: Has the White House proposed any substantive changes to any EPA public communications relating to Hurricane Katrina or Hurricane Rita?

Response: The White House has not provided any changes to any EPA publications relating to Hurricane Katrina or Hurricane Rita.

Question: If so, can you provide us with a copy of the public communications both before and after your designees reviewed them at the White House?

Response: The White House has not provided any changes to any EPA publications relating to Hurricane Katrina or Hurricane Rita.

Answers to Questions of the Honorable Paul E. Gillmor
from Erik D. Olson, NRDC
October 31, 2005

1. **Your testimony stated that some of the information you have regarding the environmental damage and resultant health problems is "anecdotal." Do you consider the testimony that the Federal witnesses gave on the first panel to corroborate the stories you are hearing? If not, where do you see an inconsistency and do you have specific examples.**

The Federal witnesses, particularly Dr. Falk of the Agency for Toxic Substances and Disease Registry (ATSDR), and Marcus Peacock, Deputy Administrator for EPA, cautioned that there are real health risks for some people returning to certain Katrina-affected areas in New Orleans and elsewhere in the Gulf States. They mentioned that elevated levels of bacteria and toxic chemicals were present in some areas. However, none of the federal witnesses specifically addressed whether their agencies have been monitoring or treating people in the area for floodwater-induced or other illnesses. Indeed, we heard and read no statements from federal witnesses about any effort to track or record illnesses whatsoever. This is a source of concern, particularly since ATSDR is specifically charged, under section 104(i) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) with conducting health surveillance and health assessments when there are known or suspected releases of hazardous substances, as clearly there were after at least 575 reported oil and hazardous substance spills in the wake of Katrina and Rita. CERCLA requires such surveillance, and mandates that ATSDR "shall…in cases of public health emergencies caused or believed to be caused by exposure to toxic substances, provide medical care and testing to exposed individuals… or any other assistance appropriate under the circumstances." [42 USC § 9604(i)(1)(D)]. The Act also provides that "[i]n cases of public health emergencies, exposed persons shall be eligible for admission to hospitals and other facilities and services operated or provided by the Public Health Service." [42 USC § 9604(i)(1)(E)]. There was no mention in the federal witnesses' testimony (or in other public statements of which we are aware) that ATSDR or other federal agencies are tracking contamination-related disease or providing public summaries of any examples of illnesses or treatment of exposed people as envisioned by the statute. This has left us to rely upon anecdotal eyewitness accounts of illnesses. We do not, therefore, believe that the testimony of the Federal witnesses either corroborates or contradicts our testimony—it simply fails to deal with the on-the-ground reports of illnesses among first responders and others who allegedly became ill due to exposure to floodwaters or other toxic conditions.

2. **In the start of your written testimony, you mentioned a pretty extensive outreach effort that you are coordinating. Later in your testimony you mention that people were misled about their ability to return to their home because EPA publicly stated, "[t]he screening results indicated that chemical concentrations in most areas are below ATSDR health standards of concern." Has EPA ever stated that the water was safe to drink or that people should return home? Did anyone in your group tell you that EPA officials specifically told them otherwise?**

EPA has made repeated public statements that its test results for air pollution "indicated that chemical concentrations in most areas are below ATSDR health standards of concern." (see, e.g., http://www.epa.gov/katrina/testresults/air/taga.html and http://yosemite.epa.gov/r6/press.nsf/name/mobilesampling). As we noted in our testimony, EPA presents its data on benzene and other volatile organic compound air pollution and compares the levels detected to the acute, short term (24-hour) Agency for Toxic Substances Disease Registry (ATSDR) safety levels (called Minimal Risk Levels, or MRLs). However, since many residents are returning permanently or are at least likely to stay for an extended period to clean up and rebuild, it would be more accurate to establish safety by comparing the levels of benzene detected in the air to the ATSDR "intermediate" safety levels (for 2-weeks or more exposure) or chronic safety levels (for 1 year or more exposure). EPA's tests show benzene levels in most of the city of New Orleans to be higher than the 4 parts per billion (ppb) intermediate (2-week) ATSDR safety level for benzene, yet EPA compares these test results only to the 50 ppb short-term safety level that is only relevant for short-term exposure. We therefore believe that EPA's statements that chemical concentrations in most areas are "below ATSDR health standards of concern" are misleading because these statements are based only upon the short-term (24-hour) standard for benzene.

With respect to drinking water safety, the state of Louisiana and Mayor of New Orleans declared that tap water was safe to drink on the city's east bank from the Jefferson Parish line to the Industrial Canal on October 6, and according to press accounts, EPA concurred in that announcement. See, for example, http://www.2theadvocate.com/stories/100805/new_certify001.shtml Moreover, EPA's drinking water fact sheet for Louisiana consumers and EPA's website simply link to and incorporate by reference the State's statements on drinking water safety in the city, including the State's lifting of the boil water advisory for New Orleans—see http://www.epa.gov/katrina/outreach/drinking_water-la.pdf. Thus, EPA has publicly incorporated by reference and according to press accounts embraced the state's October 6 advice that water is safe to drink in much of New Orleans.

3. **Your testimony makes a good point that Superfund and OSHA regulations require that anyone working on response to an oil or hazardous substance spill be provided with appropriate protective gear. Yet, how feasible is it to provide enough suits and training for all the people that would need them in the larger urban settings? Recognizing the scope of the probe and the unusual circumstances, are there other, non-legally-mandated alternatives you could suggest protecting workers and citizens alike from unhealthy exposures and expediting recovery efforts?**

NRDC's experts have concluded that people who are planning on spending significant time in the formerly-flooded areas working on clean up, demolition, or other activities that are likely to put them into contact with receded floodwater, sediment, airborne dust from the dried sediment, or significant mold, should wear protective clothing (notably, waterproof gloves, a respirator, safety glasses, and a coverall made of a chemical-resistant material such as Tyvek, and boots). EPA and State officials also have recommended similar precautions for people who are likely to be exposed to water or dust. See, for example, precautions recommended by State officials at http://www.dhh.louisiana.gov/offices/publications/pubs-145/Fact%20Sheet_Personal%20Protection_0926%20_7edit.pdf and EPA-recommended precautions at http://www.epa.gov/katrina/testresults/sediments/index.html ("EPA and ATSDR/CDC conclude that exposures at these levels during response activities are not expected to cause adverse health effects as long as the proper protective equipment is worn such as gloves and safety glasses. EPA and ATSDR/CDC recommend avoiding all contact with sediment deposited by the flood water, where possible, or washing with soap and water due to potential concerns associated with long-term skin contact.") The cost of such an outfit is around $50 per person—far less than the cost of any medical treatment or disease. In bulk, for example, Tyvek suits can be purchased for about $5 each; appropriate respirators with canisters for less than $20 each; gloves for less than $5 a pair, safety goggles for under $5, and boots for about $12. Some local and other groups, such as the Southern Mutual Help Association, have been urging that federal and State authorities distribute these safety kits to returning residents. See http://www.southernmutualhelp.org/RuralRecoveryFundFieldCleanupKits20051005.cfm We agree and join the call for federal authorities to make such kits available to returning citizens.

4. **Your testimony states that you have heard from many local citizens that EPA's method of releasing the test results is not an effective way to get information to the vast majority of evacuees who do not have internet access and are often not able to digest and understand the data. Through your experience, what do you consider to be more reasonable and appropriate ways to tackle public education problems?**

Since our testimony and after we and others raised this issue directly with EPA, EPA has made a significant effort to expand the ways that it reaches out to the public, though we believe that it still has a way to go to assure that the vast majority of residents get the message. According to our partners on the ground in Louisiana and other affected states, the best ways to reach the public are through repeated messages through the mass media, including repeated ongoing appearances on radio and TV, and through paid mass-market advertising. In addition, outreach through established non-governmental groups, churches, neighborhood associations, and other civic organizations is important.

5. **There was an inference in your testimony that EPA was hiding testing data from the locals as well as a direct accusation EPA was derelict in its duties by not overruling local officials regarding the return of citizens into unsafe parts of their communities. As I understand it, the local evacuation orders are the jurisdiction of local and state officials, not EPA. How do you justify your blame on EPA when it is the local officials that have the power to demand answers or action before they tell their residents to stay, leave, or return? Don't local officials deserve the same, if not more blame, for disregarding the safety of the very communities in which they live and work? If EPA has the legal authority to overrule the local and state decision makers, can you please stare for the record where in law it exists?**

We did not accuse EPA of "hiding test data." However, we have been critical of the agency for its delays in releasing some of its data to the public, and for failing to respond to our September 12, 2005 Freedom of Information Act request for drinking water, air, floodwater, and other data, including our request for expedited review and response. EPA has acknowledged that our request qualifies for an expedited response, but has failed to respond so far, despite the expiration of the legal deadline for response weeks ago.

With respect to EPA's duties with respect to approving the return of citizens to flooded areas affected by hazardous substances and oil spills, our testimony clearly outlined our view that EPA is not living up to its duty to assure that the public is fully protected. As EPA itself notes on its Katrina home page, "In emergency situations such as this, *EPA serves as the lead Agency* for the cleanup of hazardous materials, including oil and gasoline." http://www.epa.gov/katrina/index.html (emphasis added).

Indeed, under such laws as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or "Superfund"), the Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA),), and Oil Pollution Act (OPA), and under its own National Contingency Plan (NCP) regulations, EPA bears the lead responsibility for evaluating and acting to remedy environmental health threats. EPA has the legal authority and both the moral and legal obligation to ensure that the health of citizens potentially exposed to toxic chemicals as a result of hazardous substance or oil releases is fully protected. While we agree that local and state authorities also share in the legal and moral obligation to assure that local residents are protected from such environmental health threats, under federal law, when there is such a declared national emergency and a nationally significant threat from hazardous substances and oil, EPA bears the responsibility of being "*the lead agency*" for assuring public health protection from these environmental health threats.

The NCP regulations impose numerous obligations on the agency to ensure that its response to releases of hazardous substances or oil protect exposed citizens. For example, the NCP requires that after an oil spill, "[d]efensive actions *shall* begin as soon as possible to prevent, minimize, or mitigate threat(s) to the public health or welfare of the United States or the environment." 40 C.F.R. §300.310(a)(emphasis added). Similarly, if "the discharge poses or may present a substantial threat to public health or welfare of the United States, the [EPA representative] *shall*

direct all federal, state, or private actions to remove the discharge or to mitigate or prevent the threat of such a discharge, as appropriate." Id. §300.322(b)(emphasis added).

EPA has sweeping and powerful authorities to assure public protection from hazardous substances and oil under several laws. First, Superfund gives the agency extraordinary authority to issue orders to individuals, companies, or officials to take any action EPA sees as needed to protect public health from imminent and substantial endangerment from a release or potential release of hazardous substances (section 106). EPA also is authorized to conduct cleanup or relocations or other actions needed to protect public health even if no individual or company can be identified as the party responsible for the contamination. Clearly, with over 575 reported spills of oil and hazardous substances from Katrina and Rita, this law's powers could be invoked.

These authorities manifestly authorize EPA to, for example, clean up toxins and relocate residents from toxic-contaminated homes or communities. EPA has relocated people from contaminated homes, and has sometimes even relocated entire communities (such as Times Beach Missouri, Love Canal in New York, and more recently a large number of pesticide-contaminated homes in Mississippi, Louisiana, and other states) due to hazardous substance contamination. EPA often has relied upon its Superfund authorities and funding for these removal actions and relocations, but the Superfund is now largely bankrupt because Congress has ended the fee on the chemical and oil industry that funded it, so all cleanup and relocation costs now must come directly from EPA's budget and ultimately from the general taxpayer.

In addition to Superfund, each of EPA's major statutes (the Safe Drinking Water Act, Resource Conservation and Recovery Act, Clean Air Act, Clean Water Act, etc.) includes a plenary "imminent and substantial endangerment" provision that allows EPA to go to court and/or issue administrative orders to force essentially any action that EPA believes is necessary to protect public health or the environment from an imminent and substantial endangerment due to a release or threatened release of hazardous chemicals or petroleum. The term imminent and substantial endangerment has been read by the courts very broadly to favor EPA intervention whenever there is a reasonable question about the safety of the public posed by toxic pollution. Examples of EPA's imminent and substantial endangerment authorities, which EPA has used in the past to force action to protect the public from pollution include:

- ***Superfund, which has the broadest imminent and substantial endangerment authority for EPA, providing in section 106:***

  Abatement actions

  (a) Maintenance, jurisdiction, etc.

  In addition to any other action taken by a State or local government, when the President [delegated to EPA] determines that there may be an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from a facility, he may require the Attorney General of the United States to secure such relief as may be necessary to abate such danger or threat, and the district court of the United States in the district in which the threat occurs shall have jurisdiction to grant such relief as the public interest and the equities of the case may require. The President [delegated to EPA] may also, after notice to the affected State, take other action under this

section including, but not limited to, issuing such orders as may be necessary to protect public health and welfare and the environment.

- ***The Resource Conservation and Recovery Act (RCRA), which in section 7003 lets EPA sue or issue orders to force action "as may be necessary" to protect the public from waste pollution:***

  Imminent hazard

  (a) Authority of Administrator

  Notwithstanding any other provision of this chapter, upon receipt of evidence that the past or present handling, storage, treatment, transportation or disposal of any solid waste or hazardous waste may present an imminent and substantial endangerment to health or the environment, the Administrator may bring suit on behalf of the United States in the appropriate district court against any person (including any past or present generator, past or present transporter, or past or present owner or operator of a treatment, storage, or disposal facility) who has contributed or who is contributing to such handling, storage, treatment, transportation or disposal to restrain such person from such handling, storage, treatment, transportation, or disposal, to order such person to take such other action as may be necessary, or both.... The Administrator may also, after notice to the affected State, take other action under this section including, but not limited to, issuing such orders as may be necessary to protect public health and the environment.

- ***The Safe Drinking Water Act's section 1431, which provides EPA broad authority to issue orders or sue to force action to protect public health from possible contamination of water supplies or underground water:***

  Emergency Powers

  (a) *Actions authorized against imminent and substantial endangerment to health*

  Notwithstanding any other provision of this subchapter the Administrator, upon receipt of information that a contaminant which is present in or is likely to enter a public water system or an underground source of drinking water, or that there is a threatened or potential terrorist attack (or other intentional act designed to disrupt the provision of safe drinking water or to impact adversely the safety of drinking water supplied to communities and individuals), which may present an imminent and substantial endangerment to the health of persons, and that appropriate State and local authorities have not acted to protect the health of such persons, may take such actions as he may deem necessary in order to protect the health of such persons. To the extent he determines it to be practicable in light of such imminent endangerment, he shall consult with the State and local authorities in order to confirm the correctness of the information on which action proposed to be taken under this subsection is based and to ascertain the action which such authorities are or will be taking. The action which the Administrator may take may include (but shall not be limited to)—

  (1) issuing such orders as may be necessary to protect the health of persons who are or may be users of such system (including travelers),

including orders requiring the provision of alternative water supplies by persons who caused or contributed to the endangerment, and

(2) commencing a civil action for appropriate relief, including a restraining order or permanent or temporary injunction.

- ***Similarly, the Clean Water Act section 1364 gives EPA authority to respond to such endangerment by suing for actions "as may be necessary" to force anyone causing or contributing to pollution to take any action needed to protect public health or the environment:***

Emergency powers

(a) Emergency powers

Notwithstanding any other provision of this chapter, the Administrator upon receipt of evidence that a pollution source or combination of sources is presenting an imminent and substantial endangerment to the health of persons or to the welfare of persons where such endangerment is to the livelihood of such persons, such as inability to market shellfish, may bring suit on behalf of the United States in the appropriate district court to immediately restrain any person causing or contributing to the alleged pollution to stop the discharge of pollutants causing or contributing to such pollution or to take such other action as may be necessary.

Thus, taken together with numerous other legal authorities, EPA has the responsibility as lead agency in the case of such nationally-declared emergencies, and has ample authority to require action to be taken to protect the people of New Orleans and other communities from toxic contamination.

6. **Your testimony also discussed environmental waivers. You mentioned that you saw the potential of waivers for "very limited, time-restricted waivers of certain requirements in consultation with the public." Does this mean you would make emergency response actions by EPA subject to public participation requirements before the Agency can act? You also mention that current law provides such waiver authorities to EPA and often to state authorities. Could you please cite the specific Federal waiver authorities that are given to EPA?**

We do not believe that EPA needs additional legal authorities to waive or relax laws in order to respond to Katrina and Rita. Indeed, EPA has testified that it has identified no need for such additional waiver authorities. The Congressional Research Service's September 29, 2005 report on waivers noted that EPA already has numerous authorities to waive requirements, and concluded that "what is lacking are specific examples of the types of activity that would constitute essential components of reconstruction but that might not be permitted or could be delayed under current law and regulations." We and others believe that additional broad waivers of environmental and health statutes would not help the victims of Katrina and Rita—they would only make matters worse for local residents, posing additional health and other risks at the precise time when they need stronger, not weaker health and environmental protections.

As is discussed in the attached sheet on waiver authorities already available to EPA, the agency has numerous legal provisions available to it under its laws including the Stafford Act, CERCLA, RCRA, the Clean Air Act, the Endangered Species Act, and other authorities, to waive certain legal requirements in emergency situations. EPA also can take advantage of the Administrative Procedure Act's (APA) two "good cause" exceptions for undertaking emergency rulemaking in appropriate circumstances. See, 5 U.S.C. § 553(b)(3)(B) & (d)(3).

While we understood the need in the immediate aftermath of Katrina for emergency action without substantial public input, and while we supported, for example, EPA's initial temporary emergency waiver of certain fuel standards (see attached letter), we are no longer in emergency mode. We believe that it is wise for EPA to seek public input and to consult with local authorities and citizens whenever possible before undertaking ongoing major actions that may affect public health or the environment, though we have recognized that in certain limited true emergency circumstances, such consultation may of necessity have been very limited or even impossible. Since we are no longer in emergency crisis mode and are in ongoing response mode, it generally should be possible to incorporate public input into the decision making process. As key decisions are made about cleaning up and rebuilding storm-affected areas, it is crucial to involve the public and local authorities and officials in order to assure the decisions are well-informed and credible to the local community.

WAIVER AUTHORITIES IN EXISTING ENVIRONMENTAL STATUTES

Stafford Act: General and NEPA
The Stafford Act includes two waiver provisions that apply in a declared disaster like Hurricane Katrina:

- Section 301 allows any Federal agency charged with the administration of a Federal assistance program to modify or waive administrative conditions for assistance that impede their ability to provide assistance in a major disaster
- Section 316 excludes from NEPA coverage actions taken to restore a facility to its condition prior to a disaster under Stafford Act sections:
  - 402 General Federal Assistance
  - 403 Essential Assistance
  - 406 Repair, restoration and replacement of damaged facilities
  - 407 Debris removal
  - 502 Federal emergency assistance
  - 422 Simplified procedures

Comprehensive Environmental Response Compensation and Liability Act (CERCLA)
Superfund Cleanup Standards - CERCLA 121(d)(4) - President may select remedial action cleanup levels not meeting required standards when compliance "would result in greater risk to human health."

Superfund Emergency Removals - CERCLA 104 (a) removal authority allows great flexibility as opposed to remedial actions, so no waiver authority is necessary.

DoE and DoD Facilities - CERCLA 120(j) - President may issue site specific orders regarding response actions at any specified site or facility of the Department of Energy or the Department of Defense as may be necessary to protect the national security interests of the U.S. at that site or facility. Such orders may include an exemption where necessary from CERCLA requirements with respect to the site or facility.

Resource Conservation and Recovery Act (RCRA)
Hazardous Waste Facilities - RCRA 6001(a) - President may exempt federal facilities from RCRA
Underground Storage Tanks - RCRA 9007(b) - President may exempt federal facilities from UST
Medical Waste - RCRA 11006(a) - President may exempt federal facilities from medical waste requirements

Clean Air Act (CAA)
Under the Clean Air Act, the EPA may waive select fuel additive requirements. The Agency has used these liberally after Hurricane Katrina to respond to fuel shortage issues. In total, the EPA issued 10 waivers. EPA issued one nationwide waiver which

expired week of September 12. EPA issued one waiver for the four states impacted by the hurricane (MS, LA, FL and AL). That waiver was superceded by the now-expired nationwide waiver. Six waivers were issued for states that were not directly affected by Hurricane Katrina but that have fuel supply issues in their whole state or large geographic areas within their state as a result of supply disruption caused by the storm (two of the six states have gotten two waivers, they are: AZ, TX, CA, TN, GA (2), and VA (2)).

Waivers were provided for the low-RVP gas that states were using to meet CAA requirements, the reformulated gasoline program, low sulfur diesel requirements, and low sulfur gasoline requirements. This means that fuel additives that would normally be required in certain parts of the country to reduce air quality impacts will not be required. In theory, this action will ease supply issues by allowing one type of fuel to be sold and distributed throughout the affected area without regard for which fuel additives may or may not be present.

Control of Air Pollution From Federal Facilities: CAA 118 provides an exemption from stationary source standards up to 2 years for Federal facilities if the President determines that it is in the "paramount interest of the United States."

Endangered Species Act
Under section 7(p) of the Endangered Species Act, if there is a Presidential declaration of a major disaster, the president can waive the requirements of section 7 consultation in the disaster area for any project for the repair or replacement of a public facility and is necessary to prevent the recurrence of such a natural disaster and to reduce the potential loss of human life and to involve an emergency situation which does not allow the ordinary procedures of this section to be followed. The administration invoked this authority after Hurricane Katrina.

Enforcement Discretion
EPA has enforcement discretion to provide a "no action" assurance to requestors. EPA policy identifies two general situations where a no action assurance may be appropriate – first, where it is expressly provided for in statute; and second, in, "extremely unusual circumstances where an assurance is clearly necessary to serve the public interest and which no other mechanism can address adequately." Recently, EPA has broadly used this discretion in a variety of contexts. For example, EPA used this discretion after Hurricane Katrina to permit the Corps of Engineers to pump water out of New Orleans and into Lake Pontchartrain without a National Pollutant Discharge Elimination System (NPDES) permit under the Clean Water Act. EPA has also allowed some companies under compliance orders with the EPA to extend their compliance schedules due to Hurricane Katrina.

October 31, 2005

Paul E. Gillmor
Chairman
Subcommittee on Environment and
Hazardous Materials
U.S. House of Representatives
Washington, D.C. 20515

RE: Hearing Titled "Hurricane Katrina: Assessing the Present Environmental Status"

Dear Congressman Gillmor:

In follow up to your October 18 letter with follow-up questions, enclosed is the response from the National Ground Water Association

Sincerely yours,

Stephen Ragone, Ph.D.
Director of Science and Technology

/cr

The Honorable Paul E. Gillmor

1. **Your testimony did not mention that EPA was providing water-testing kits to all parishes in Louisiana. Were there any specific parishes that EPA omitted that you feel should have been covered?**

   At the time of our September 29 testimony, we were aware that the Louisiana Department of Health, in conjunction with the U.S. EPA and the Louisiana Rural Water Association, was offering free water testing to residents in certain Louisiana parishes with flooded household wells. Private sector professionals were and continue to test flooded household water wells following servicing. U.S. EPA Assistant Administrator Ben Grumbles recently testified that "U.S. EPA mobile labs in Mississippi and Louisiana, which initially provided support to test water for public water systems, are now largely focusing their efforts on testing private water supplies." However, we do not have a comprehensive report of impacted parishes in Louisiana that received and distributed water-testing kits at this time.

2. **Your testimony, unlike some of the other information gathered by the committee, seems to suggest that water system training helps to prepare for – almost prevent damage from – these natural events. Others have argued that "all-the-planning-in-the-world" does not do justice to what is required in a category four hurricane? Why do you take this position?**

   Ground water is a rich resource which many don't realize constitute a major supply of our population's drinking water. The nature of this source of water - being found below land surface - significantly decreases the likelihood that it will be contaminated by storms and even flooding. The water well is the primary structural installation or source of ground water to drink. The water intake of the well is located well below ground also making it relatively safe from surface storm damage and with proper provisions, can be made safe from most temporary flooding. Modern wells are emplaced with grouting or seals to protect from infiltration around the well casing and a tight cover on the top with an air vent or breather valve which could be shut off or plugged so flood water could not easily enter the well.

   Water well system training would provide information to water system and municipal personnel on how to prepare the well for flood exposure. It would also allow a community to gradually upgrade older wells to the specifications that would allow a simple turning off of a vent valve. Such precautions would better protect the aquifer from direct contamination via inundated wells. Of course electrical controls and line shaft pumps would be exposed but these either could be installed in water tight enclosures or more easily serviced than trying to clean and disinfect the well

   Older wells that are not as well protected from inundation and contamination require cleaning and disinfection. The typical recommendation for well disinfection is to add

chlorine to the well and then pump off the water. A sample of water is then submitted for coliform and *E-coli* testing. However, if a well has been flooded, there is usually considerable debris in the well bottom. This debris is not removed by just pumping the well (the pump is usually a considerable distance from the well bottom). The hypochlorite disinfectant kills the free swimming bacteria in the upper reaches of the well and the sample drawn the first few days following chlorination will show negative. Unfortunately bacteria harbored in the "muck" in the well bottom may proliferate and gradually move upwards towards the water being pulled into the pump and the water becomes contaminated. We believe training and discussion, prior to an emergency, among water well professionals and local government personnel, as well as public education, regarding standard disinfection protocols and whether additional measures may be needed to address flooded wells would benefit response efforts. The NGWA's 2002 report to the Federal Emergency Management Agency (FEMA) provided significant insights about proper well clean-up and disinfection protocols. However, the report also recommends additional field research following more closely a flooding event to extend the initial report's findings to other geographical and hydrogeological settings in order to ensure a wide variety of emergency situations can be dealt with. .

3. **Communications problems, particularly the loss of phone service, complicated response efforts designed to help alleviate the environmental damage caused to groundwater by Hurricane Katrina. Could you please talk about the practical impact of losing communication services and what you suggest be done to avoid this problem in the future?**

   When communications services fail, it seems that the failsafe fallback would be to have widely communicated and understood protocols in place with authority to act delegated in advance. Local community training and education, such as that outlined in my response to question 2, will ensure self sufficiency at the local level that minimizes the need for communication.

4. **EPA and the Mississippi Rural Water Association have testified that water services are coming back on line at a steady pace and that services, while not ideal, are returning. Your testimony paints a much bleaker picture about drinking water services from ground water wells. How do you square what you are saying with what they are saying?**

   In our testimony we noted that we were receiving reports that the hardest hit communities still did not have electricity, generators or operational water pumps; however, reports from areas less impacted by the storm were that strides were being made to return public and private water systems to operation. For example, we heard that ground water supplied public water systems in Alabama were generally back in operation. Also, water well professionals in Louisiana relayed that they were fielding calls for assistance from domestic well owners, and progress was being made on that front as well.

As regards ground water wells, a concern we heard expressed by some water well professionals is the importance of balancing moving private and public water systems back on line expeditiously while at the same time ensuring the proper flushing and cleaning of inundated ground water wells to avoid potential longer term problems. Our testimony's reference to shock chlorination reflects, in part, this concern.

5. **Your recommendations to FEMA look a lot like the voluntary arrangement that Mayor Rutledge explained among his member mayors in Mississippi. Has the National Ground Water Association worked to promote these findings or set up protocols or other workshops to promote this type of coordinated response effort?**

The Association disseminated the technical results of the research on emergency well disinfection following flooding. An article appeared in the January-February 2004 *Journal of Ground Water*. Additionally, NGWA hosted a September 5-6, 2002 conference in Sacramento, California titled "Innovative Approaches to Ground Water Disinfection." The results of the FEMA study were presented at the conference. John Schnieders, the 2002 McEllhiney Lecturer, an NGWA funded speaker series, spoke at 31 professional meetings on the topic of well disinfection.

NGWA piloted four training sessions in 2004 for local government and non-government well inspectors. While not focused on inundated wells following a hurricane, the workshops conveyed information on proper well construction, sampling and disinfection techniques. The principal researcher for the FEMA study assisted in the workshop material preparation and personally made a presentation in Mississippi, one of the four pilot states. NGWA has requested additional federal funding to help continue this program.

As noted in the Association's testimony, more has to be done, including more within the Association community. We will be talking with our state association affiliates about what we may be able to do in conjunction with local and state government agencies.

The Honorable Paul E. Gillmor

1. Your testimony asserts that an independent bipartisan commission should be responsible for conducting oversight of the problems associated with Hurricane Katrina. By virtue of your very presence at the formal hearing and your agreement to answer further written questions from the committee, you must consider this committee to be an oversight body with knowledge and background on the issues and fully capable of legitimate work on this subject. If that is the case, how do you see the work of this and other congressional committees facilitating in oversight work independent of any other commission?

Thank you very much for the opportunity to testify before your committee. The scholarly literature on disaster response emphasizes the need for open-mindedness on the part of public officials and warns against the normal tendency to view response choices through a partisan lens. It is in this spirit that I interpret your follow-up questions and in that spirit that I present my answers.

Regarding an independent commission, despite your Committee's obvious expertise in the area, investigations of large scale-disasters, such as the 9/11 attacks or Hurricane Katrina quickly overwhelm the normal channels of investigation. Disaster response is also particularly vulnerable to political jockeying, which can taint the credibility of even the most virtuous Congressional committee. The independent 9/11 Commission investigated the aftermath of the terrorist attacks in a fair and comprehensive way, without usurping the authority of Congressional committees. An independent Katrina commission could proceed in a similar way.

2. Your testimony states that "other chemicals discovered in the floodwaters have been a variety of heavy metals and polycyclic aromatic hydrocarbons and that some experts have stated that they would be surprised if continued testing fails to detect unsafe levels of some of these contaminants." First, is it true that just because an item registers at a level of detection for being present does not always mean that the mere presence of the detection is an indication of harm to human health? If this is true, then how can you state without reservation that public health problems are still rampant? Second, in your testimony, you implied that EPA is purposely not testing areas that could or are likely to be heavily contaminated. What proof do you have for this assertion?

Of course, it is true that detection limits for chemicals can be lower than their No Observed Adverse Effect Level. However, I base my statement that the pollution in New Orleans is likely to be harmful on a review of available information regarding the toxicity and amount of such materials. EPA is not testing areas that may be contaminated because they do not have adequate staff, resources, or access. Even the EPA's own Science Advisory Board now concedes that the EPA did not act quickly enough to test for many deadly contaminants in many areas. This does not mean that EPA is hurting people "on purpose," but that the lack of leadership and adequate resources are exposing vulnerable people to even more environmental risks.

3. Your testimony stated that the intentional discharge of contamination into Lake Pontchartrain is a "sad sequel to hard-won success in cleaning up Lake Ponchartrain to the point that portions were recently deemed safe for swimming." Prior to the Hurricane, though, Lake Pontchartrain

was not in compliance with all Federal environmental water quality laws. Under the line of reasoning you use about migration of contaminants in bodies of water, Lake Pontchartrain could have never have been contaminant-free enough to allow people to swim in it. How do you justify this statement and your reasoning?

As a legal matter, it is possible for water bodies to be deemed safe for swimming in some parts even though their waters are not in compliance with all federal water quality laws. The discharge of Katrina waste water into Lake Pontchartrain will increase the overall contamination of the lake and will almost certainly make it less swimmable, even according to the most optimistic of pollution studies.

4. Earlier in your testimony you reference the need for local residents and officials to rely on the environmental expertise of EPA in determining what was safe. Yet, later in your remarks you mention that flooding of Superfund sites caused damage that was "exacerbated" by "poor initial cleanups" and that EPA badly mishandled the Agriculture Street Landfill. Since EPA has authorities under Federal hazardous waste laws to overrule state approved cleanup plans and can be the only entity to determine when a site is truly construction complete, aren't you contradicting yourself by claiming that EPA was incapable of establishing appropriate cleanup standards for these sites in the first place but that you think they should be unquestioned in their response to Katrina?

When a government body fails in one mission, it should be reformed to succeed, not given a pass. Congress gave EPA the legal duty to protect human exposure to contaminated neighborhoods by, among other things, setting uniform standards for residential re-occupancy. Congress should see that the EPA has the resources and the incentives to carry out this duty. I never said that I thought the EPA "should be unquestioned in their [sic] response to Katrina."

5. You claim that the aftermath of Hurricane Katrina will "create brownfield sites that are unsuitable for redevelopment." This committee took great pains to author and enact legislation removing legal and funding barriers to encourage greater brownfield development. Could you tell me what makes these "brownfields" you site unsuitable for development?

The more contaminated a browfield area and the more vulnerable the exposed population, the more difficult and costly it is to redevelop it in a safe and sustainable way. The reason has less to do with legal barriers than it does with physical limitations and the availability of public financial resources.

The Honorable Paul E. Gillmor (continued)

6. Your testimony makes the reimposition of the "Superfund" tax a key environmental response to Hurricane Katrina's devastation. Levying new, additional taxes on major businesses in a region you wish to rebuild is a rather unique notion, especially since this tax is assessed based on identity rather than causation. In fact, making this a centerpiece of environmental response legislation assumes that many more Superfund sites exist now than did before Hurricane Katrina – though EPA and Louisiana DEQ testified to the contrary. Do you know for a fact how many new National Priorities List sites will be added as a result of Hurricane Katrina? If so, where did you obtain this information?

   The Superfund tax is needed to assure that contaminated sites are cleaned up quickly and adequately. Since Congress's refusal to renew the Superfund tax, clean ups have slowed dramatically throughout the country. Hurricane Katrina compromised several Superfund sites in the area, all of which will require response actions. As you note, it is also likely that new areas of contamination will be designated as new Superfund sites as a result of Katrina. Finally, there are many ongoing Superfund sites in the country that could one day be compromised by hurricane, flood, or earthquake. Securing these sites now, before disaster strikes, is essential to protecting American citizens in the future. There is nothing unusual about a tax that links payment to "identity rather than causation." Virtually all taxes do this.

7. Your written testimony lamented, in a footnote, that there were no potentially responsible parties that could be pursued for Superfund liability claims at the other sites in New Orleans. Is your concern more with proper cleanups or does this footnote underpin a larger concern about the ability to obtaining funding through lawsuits seeking environmental and non-economic damages?

   My interest, as my testimony states, concerns the use of Superfund suits to achieve speedy and adequate clean ups of contaminated sites. Superfund law suits (unless they involve claims of natural resource damages brought by a government or an Indian tribe) do not provide for environmental and non-economic damages. If you are interested in this subject, I would be happy to answer any specific questions you have.

8. You discussed at the hearing how the EPA website was hard to understand and difficult to navigate. However, it appears EPA's links to information on Hurricane Katrina appear at the top of the main homepage for the Agency. Has this website's appearance changed or been reconfigured since you last looked at it? Also, you testified that the "blogs" of local news station websites were a good source of information on the area and the affects of the Hurricane, but that EPA's use of the Internet was a terrible way to disseminate information. How do you square these two statements?

EPA's Web site continues to change to accommodate more Katrina-based information and in order to make it clearer for the public to understand. That said, New Orleans residents continue to complain about how information is made available to the public. I have personally suggested to EPA officials that more information be posted on street signs and at common meeting areas (Home Depots, coffee shops, etc.) I also suggested that EPA clearly state uniform safety standards for re-occupation. This last suggestion is critical, but

has so far been ignored. I never said the internet was a "terrible way to disseminate information." It is a good, but incomplete way. A look at the local blogs will show that what residents most want to know about is what the EPA has so far refused to talk about: whether New Orleans should be considered safe for families to reoccupy.

The Honorable Paul E. Gillmor

1. Your testimony estimated that the New Orleans area will be completely "unwatered" in early to mid-October. **Question:** Is it fair to say now that the city is fully unwatered? You further state that as the water drains to its final amounts, there may be more concentrated levels of contaminants that will require special attention and handling. What contaminants do you expect to need additional remediation and in which parishes do you anticipate this will occur? Are you coordinating right now with EPA and state agencies? Have you witnessed this higher concentration of contaminants in the weeks since the water has drained?

   Answer: *The city was declared unwatered on 11 October 2005, 43 days after Katrina impacted the city. There were some concerns that pollutants such as petroleum hydrocarbons, fuel oils, arsenic and lead would be at high levels, collected in low spots. Currently, test data from EPA and the Corps indicate that pollutants have not been found above the current EPA advisory for simple precautionary contact. It is possible that in St. Bernard Parish and Plaquemines Parish that some isolated elevated pollution sites will be found, and the Corps and EPA already have clean-up response and communication processes in place. The Corps communicates on a daily basis with EPA and Louisiana Department of Environmental Quality, both in meetings and conference calls. The higher concentration of contaminants in water requiring a higher level of response has not been seen yet.*

2. You testified of a comprehensive debris removal effort in the areas impacted by Hurricane Katrina and that there is strong interagency communication between the federal, state and local officials. In addition, you mentioned a multi-agency working group that meets twice weekly to coordinate debris management issues such as recycling and reuse, which includes private, non-profit, and for profit entities. **Question**: Please give us specific examples of the kinds of accomplishments that emerged from these arrangements.

   Answer: *As stated in my testimony, there has been and continues to be strong interagency communication and collaboration relative to debris management. Examples of the interagency accomplishments that have resulted from working closely together include:*

   - *Facilitating the use of local businesses in the recovery and recycling of "white goods" - Communications with EPA enabled the Corps to become aware of the interest and capabilities of the Southern Scrap Metal Recycling, Inc., a company with offices in both Mississippi and Louisiana and facilitate that company's contact with the Corps' Prime debris contractor, which subsequently engaged Southern Scrap as a sub-contractor.*
   - *Facilitating the use of innovative debris management technologies - Communication with EPA and other agencies early on increased our awareness of the need to establish a process through which technologies could be reviewed for the purpose of identifying their viability. As a result, technologies were validated and shared among the agencies. At the present time, the Corps is in contract negotiations with our prime contractors to facilitate the collection of vegetative debris for biomass energy generation and other beneficial reuse.*
   - *Facilitation of recycling and deconstruction/reuse of building materials – Communication across the agencies also made us aware of opportunities and challenges for deconstruction of certain structures for the purpose of salvaging*

building materials for reuse. As a result, the Corps is working with a consortium of deconstruction experts, led by the Building Materials Reuse Association (www.buildingreuse.org), to facilitate this. The benefits to deconstruction include the potential of increasing the engagement of small and local businesses in deconstruction efforts.

3. Under the Solid Waste Disposal Act, states are the lead agency in handling regular trash disposal issues. In addition, the law does not include household hazardous waste in the definition of hazardous waste, in order for it to be treated as regular garbage. Your testimony, though, states that the Corps is coordinating on this issue regarding hazardous waste. **Question**: Please describe the type of consultation that has occurred, who is leading these discussions, and what responsibilities the Corps is physically assuming in this area?

Answer: *The challenge of handling hazardous household waste was identified early on by the agencies during discussions about the overall debris management process. These consultative discussions took place largely in the field among the various agency project managers and liaisons. In terms of the collection of hazardous household waste, the EPA took the lead on this subject during these discussions because the collection and disposal of this material is an Emergency Support Function (ESF)-10 task. As a result of these consultations, however, there were locations where the Corps debris contractors supported the EPA in the collection of this type of waste. One example of this interagency collaboration is that the Corps contractors who collect white goods are following a decontamination protocol designed by the EPA and coordinated with the LA Department of Environmental Quality. Again, because of the mixed nature of much of the debris, the Corps is working closely with state and federal regulators on the handling of all types of debris including contaminated debris.*

4. **Question**: Please tell me what you are doing to increase recycling of collected storm debris?

Answer: *The Corps considers recycling a viable method for reducing the impact on landfills by decreasing the volume of debris going into them. The obstacle, however, is that debris collection for the purpose of recycling is more labor intensive than collecting debris for disposal in landfills or incineration. Nevertheless, its benefits include creating a niche industry for small and/or local firms, which would create jobs for people in communities impacted by the hurricanes, and providing a supply of affordable building materials that could be used by community members in the repair and rebuilding of their homes.*

To facilitate recycling, the Corps plans to include deconstruction of structures for the purpose of recovering usable building materials in its next round of contract solicitations. Meanwhile, the Corps has facilitated the engagement of Southern Scrap Metal Recycling, Inc., by one of our prime debris contractors. Southern Scrap Metal Recycling is concentrating on the collection and recycling of white goods in Louisiana. To address the use of the chipped vegetative debris, the Corps is helping biomass gasification companies connect with state and local energy related agencies, and is in contract negotiations to make vegetative debris, that would otherwise be collected for land filling, available for recycling. As we seek other viable ways to recover goods for recycling and reuse, we are – as always – in dialogue with our

debris managers on the ground so viable solutions are identified.

5. As you know from the hearing, I have a great deal of interest in the Lake Pontchartrain Hurricane Barrier Project (LPHBP) and the potential ramifications to the people of New Orleans because the Corps did not construct it. Some people argue that a citizen suit rightly exposed a flawed environmental impact statement (EIS), but others counter that, while the suit found a problem with the EIS, the real issue was that the LPHBP was strongly opposed by several "environmental" groups that would use any means necessary to derail the project. They further state that after relentless litigation, the Corps eventually decided that the time and money it would need to invest in the LPHBP would be resource-prohibitive in relation to the completion of the planned project.

    a. **Question**: Is it incorrect to say that litigation had no bearing on the final outcome of the LPHBP?

Answer: *If there had been no litigation, then the original authorized project would have likely been constructed (LPHBP).*

    b. **Question:** Does the Army Corps of Engineers believe that a fully constructed LPHBP would have helped save the City of New Orleans from storm surges? Why?

Answer: *It is hard to say what the impact would have been. The barriers would not have had any impact on the St Bernard or East New Orleans flooding. The floodwalls along the IHNC overtopped on the east and west side of the canal. Those walls would have been constructed to the same elevation under the LPHBP. However, further study is needed to determine how much of the city would have flooded had the original project been constructed.*

    c. **Question**: Does the Army Corps have any plans to resurrect the LPHBP?

Answer: *Construction of that particular plan is not being considered. However, some type of structure at those locations could be included in a study of any increase in the level of protection over the current authorization levels. It is likely that significant changes in the design of those structures could occur that would address many of the environmental concerns raised by the original project.*

    d. **Question**: I understand you can "model" what the likely outcome would have been had the LPHBP been constructed as initially planned. Please run the modeling and provide all the data to me. Please include, if possible, the number of lives and communities that would have been saved.

Answer: *Modeling can be run, however, it will take time to input the data on revised levee elevations and the barrier structures. The model is a numerical model that contains hundreds of thousands of data points. It will be necessary to adjust several hundred of these points in order to replicate the original LPHBP. At present the model is being utilized for numerous storm scenarios for other projects. We have not allocated funding or time for this effort, but we estimate that results could be obtained within 2 months.*

e. **Question:** What percentage of Army Corps projects have been subject to litigation under Federal citizen suit provisions?

Answer: *The Corps of Engineers Office of Counsel tracks its litigation cases by name of the complaining party and the by the legal nature of the challenge. At any given "snapshot" in time there are between 500 and 600 active cases. These run the gamut from Admiralty Claims, EEO actions, Tort Claims, Regulatory Permit issues, as well Environmental challenges (pursuant to, inter alia, the Clean Water Act, Endangered Species Act, Historic Preservation Act) to Corps projects and activities. Based on the manner in which our data is collected, it is impossible to determine the percentage of projects challenged in litigation. However, the number at any given moment is very small.*

f. **Question:** Has any Army Corps engineered project(s) been scaled back as a direct result of interest group litigation, brought under Federal citizen suit provisions, which you believe threatens the health and safety of Americans? If so, what project(s) and why?

Answer: *We are not aware of any litigation that has caused the Army Corps to scale back a project in a way that would threaten the health or safety of the American public. Litigation against the United States can culminate in a court decree or in a settlement with the plaintiffs. The Corps and the Department of the Army would never consent to a settlement agreement that we believe to be contrary to the public interest. If a court decree were ever to lead to a result that we believe would threaten the health or safety of Americans, we would appeal that decision or seek relief from Congress to deal with the situation.*

g. **Question:** Does threatened or prolonged litigation have an impact on Army Corps decisions concerning the design or scope of its projects?

Answer: *The Army Corps designs projects that benefit the public and fulfill the purposes directed by the Congress of the United States. This includes full consideration of the positive and negative environmental effects of these projects. In doing so, we seek out public input into our planning process. Litigation is one way in which the public can seek to affect our decision making.*

The Honorable John D. Dingell

1. At the Subcommittee hearing you were asked about the connection between a lawsuit to block a Corps of Engineers plan to build storm surge barriers or floodgates at the outlet of Lake Pontchartrain and the flooding that occurred in New Orleans in the aftermath of Hurricane Katrina.

   On October 9, 2005, the *Washington Post* reported on this issue as follows:

   > After Katrina, the controversy has been revisited, with some blaming the lack of floodgates – and the environmentalists – for the storm's destruction. But Corps officials recently told the Government Accountability Office that if they had gone ahead with the floodgate plan, Katrina's devastation would have been even worse, because the barriers would not have been large enough to keep the storm surge out of the lake – and the levees around the city would have been even lower.
   >
   > In any case, the decision to abandon the gates had as much to do with money as ecology. Local entities were required to pay all the operation and maintenance costs for federal hurricane projects, as well as 30 percent of construction, and New Orleans officials did not want to pay to maintain floodgates.

   Question: Is the report accurate that Corps officials informed the Government Accountability Office that if they had gone ahead with the floodgate plan, Katrina's devastation would have been even worse, because the barriers would not have been large enough to keep the storm surge out of the lake – and the levees around the city would have even lower?

   Answer: *I am not aware of the accuracy of that report.*

2. In your testimony before the Subcommittee on Environment and Hazardous Materials, you stated that one of the reasons the Corps of Engineers chose not to proceed with its original storm surge barrier or floodgate plan was because of "very substantial local opposition." **Question:** Please describe in detail the substantial local opposition and the reasons given by local officials for their opposition to the initial floodgate plan.

   Answer: *I have a copy of the public meeting minutes from February 1975. There was significant local opposition from the public and elected officials on the north shore of Lake Pontchartrain. Many environmental groups opposed the barrier as well. Most public officials in the City of New Orleans supported the barrier project. North shore officials thought the barriers would hamper commerce because navigation traffic would be confined to the dimensions of the proposed navigation structures. They also were concerned about the environment. They looked upon the barriers as protection for New Orleans, not for the north shore. Other speakers were concerned that the barriers would restrict normal flows in and out of the lake*

3. **Question:** Is it correct that in 1977 a Federal court in New Orleans ordered the Corps of Engineers to redo its environmental impact statement and update the hydrological models? Is it also correct that the Corps of Engineers chose not to fix the environmental impact statement and dropped the barrier plan entirely in favor of an upgraded levee plan.

Answer: *The Court enjoined the Corps from any further construction on the barrier structures in the Chef Menteur Pass and Rigolets and on the New Orleans East and Chalmette portions of the LPHPP. The Corps was enjoined until it revised the FEIS. The areas of concern for the Court were (a) in general, the Corps based its analysis upon model studies that did not accurately reflect the plan as set forth in the FEIS; (b) the Corps used an inadequate interdisciplinary approach to the FEIS; (c) there was inadequate consultation with federal agencies with relevant expertise; (d) there was an in adequate cost benefit analysis; and (e) there was inadequate evidence of an evaluation of alternative plans. When we studied the cost for expanding the barrier structures to improve the flows in and out of the lake, the costs escalated greatly, making the high level plan the better choice economically. So a reevaluation report was prepared along with an EIS for the high level plan. The revised plan was acceptable to the plaintiffs.*

4. **Question:** Did the cost calculations of the Corps of Engineers indicate that it would cost less to do the levee system rather than the storm surge barrier or floodgate plan?

   Answer: *Yes. A reevaluation report was prepared that showed that the barrier plan had a 3.3 to 1 benefit-cost ratio while the high level plan had a 4.2 to 1 benefit-cost ratio.*

5. A hearing of the Subcommittee on Energy and Water Development and Related Agencies of the Committee on Appropriations was held on September 28, 2005, at which you and Lt. General Carl Strock testified. **Question:** Is it correct that Lt. General Strock testified as follows?

   In terms of blaming the environmentalists for what has occurred here, as the Government Accountability Office has stated, the level of protection provided by our original proposal of a barrier system was the same as this, so I'm not certain that had we gone ahead with our proposed plan that the outcome of this event would have been any different.

   Answer: *That comports with my recollection of LTG Strock's testimony.*

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